A CATALOGUE AND ATLAS
OF
THE CADDISFLIES (TRICHOPTERA)
OF
IRELAND

James P. O'Connor MRIA

Occasional Publication of the Irish Biogeographical Society

Number 11, 2015

The front cover

The front cover shows the adults of *Polycentropus irroratus* Curtis, 1835 and *Chimarra marginata* (Linnaeus, 1761) flying around Black Bog-rush (*Schoenus nigricans*). The cover has been composed from the drawings in Plates 544 and 561 of "British Entomology; being illustrations and descriptions of the genera of insects found in Great Britain and Ireland: containing coloured figures from nature of the most rare and beautiful species, and in many instances of the plants upon which they are found" published by John Curtis in 1823-1840. The two species were among the caddisflies collected by Curtis during his visit to Ireland in 1835.

"**The world is rich in small wonders...but so poor in eyes that see them**"
(Inscribed by Glenn Wiggins (1927-2013) in a copy of his book *Larvae of the North American Caddisfly Genera* given as a gift to Patricia Schefter MacCulloch and mentioned by her in his obituary (2015)).

A CATALOGUE AND ATLAS OF THE CADDISFLIES (TRICHOPTERA) OF IRELAND

by

James P. O'Connor MRIA

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The opportunity has been taken to make some minor changes and corrections to the original book in this pdf.

Copies of this publication may be obtained by writing to The Irish Biogeographical Society c/o Dr J. P. O'Connor National Museum of Ireland – Natural History, Merrion Street, Dublin 2, Ireland or by e-mail to the Treasurer Mr John Walsh <ampersandwalsh@gmail.com> or to the Editor Dr J. P. O'Connor <joconnor@museum.ie>. Price €15 or £10 including postage.

Foreword

Readers who are unfamiliar with the caddisflies might mistakenly think that work on a relatively small group of insects in a fairly small European country could only result in a correspondingly small or even insignificant publication, but they would not have reckoned with the dedication and extraordinary breadth of knowledge of Jim O'Connor. The numbers of records and the vast amount of information combined here are simply staggering.

Jim is a modest man, and he would claim that the work depends to a great extent on the accumulated work of many dedicated workers over the decades. It is undoubtedly true that in a historical sense the study of Trichoptera in Ireland owes much to the work of a small but dedicated band of workers, beginning with such eminent entomologists as Curtis and Haliday in the early ninenteenth century. However, one name will forever shine pre-eminently over all others and one has only to see how often the initials JPOC turn up amongst the thousands of records contained in this book to see what a huge contribution to science Jim has made, ably assisted by his dedicated wife Mary, who has an excellent knowledge of the caddisflies in her own right.

The book is a tribute to many years of work, in which all the records have been collected, refined and reinterpreted with consummate care and precision. It is no exaggeration to say that such a detailed study will be the envy of many other countries, and I cannot think of any other country that owes so much to the work of one committed individual. It has been a personal pleasure and a privilege to be numbered amongst Jim's friends and colleagues for so many years.

Peter C. Barnard, Dorset, U.K.

FIGURE 1. An adult of *Limnephilus rhombicus* (Linnaeus, 1758) on a plant at Corbert Lough, County Down. © Robert Thompson.

Preface

Irish people often confuse caddisflies with moths, a mistake not made by fly-fishermen as they are important angling flies. However, they are extraordinary insects in their own right and very important in freshwater ecosystems. The immature stages rival the spiders in their use of silk. Many larvae construct beautiful cases to live in while others trap prey with complicated nets. They often have complex life-histories, larvae may stridulate like grasshoppers to protect their territories and some even grow their own food as gardeners. Adults hatching in the spring can fly away to hide in caves or other cool refuges during the summer and then return unerringly to their birth-places in the autumn to mate and produce the next generation.

I first became interested in the Trichoptera as a young teenager when I collected the cased larvae for use as bait for brown trout. At that early age, I little suspected that I would be so fortunate to work on these fascinating insects or that my future wife Mary would also be interested in them.

As an island, caddisflies had difficulties in colonizing Ireland after the last Ice Age. Nevertheless 149 species are now definitely known to have been successful in establishing themselves here. Undoubtedly several more await discovery especially in little explored habitats. This book celebrates this rich fauna, the many people who worked on the group since 1835 and the interesting discoveries made over the years. As a result of all these endeavours, it is now possible to provide information on many aspects of the Irish fauna including distributions and flight-periods. Since I first started research on the Trichoptera, I have made great friendships, visited lovely places such as lakes, rivers and waterfalls, and found exciting species. As the entomologist in the National Museum of Ireland, I became fascinated by many other insect orders but always retained a special affection for the caddisflies. Retirement in 2010, gave me the opportunity to write this book. After my museum, career, I felt greatly honoured when the Director Raghnall Ó Floinn upon reading it, agreed that the volume should be a joint publication between the Museum and the Society.

Nowadays, it is expensive to publish books. I am very grateful therefore for financial support from Professor Cormac Kilty and his wife Ann, John Walsh, Inland Fisheries Ireland, the Irish Biogeographical Society, the National Museum of Ireland and the National Parks and Wildlife Service of the Department of Arts, Heritage and the Gaeltacht, towards the printing costs. Paddy Ashe, Peter Barnard, Mary O'Connor and Ian Wallace kindly read earlier drafts of the text. Their diligence detected many typing and other errors while their suggestions and advice greatly improved the text. Peter Barnard also graciously wrote the Foreword. Over the years, many other people contributed to this book. The names of those that helped me in this project will be found in the extensive acknowledgements on pages vii-viii. To all, my sincere thanks.

James P. O'Connor, 15 July 2015

FIGURE 2. *Oligotricha striata* (Linnaeus, 1758). One of Ireland's rarest caddisflies. These copulating adults were photographed beside a garden pond in south-west Germany. © Siga, Wikimedia Commons.

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Abstract

The work is divided into two parts: a catalogue and an atlas. In the catalogue, the Irish caddisfly (Trichoptera) fauna is reviewed. A checklist of the 149 valid species is presented*. Detailed information is provided on the Irish and European distributions along with data on ecology, flight periods and taxonomy. Sections listing published and unpublished records are included. There is a comprehensive bibliography. In addition, there are accounts of the history of Irish caddisfly studies, identification and recording. The atlas contains full page maps showing the Irish distribution of each species with the 10km square records plotted on latitude and longitude maps. These are based on an analysis of some 20,000 records, both published and unpublished.

Key words: Trichoptera, caddisflies, Ireland, distributions, ecology, flight periods, taxonomy, identification, history, recording

*156 species now known in 2021 see page 35.

Introduction

The Trichoptera (meaning "hairy wings"), or caddisflies (in Gaelic, caddisfly: an cuil chadáin; caddisflies: na cuileoga chadáin), comprise the most diverse insect order whose members are exclusively aquatic. Worldwide, only the aquatic Diptera outnumber them in species and ecological diversity. The larval stages are found in a wide range of aquatic habitats around the world including pools, marshes, springs, bogs, streams, waterfalls, rivers, lakes and ponds. They are often important components of food webs in these freshwater ecosystems. A small number of species have terrestrial larvae living in damp conditions.

The adults are terrestrial and resemble moths to which they are closely related. Indeed the two orders (Trichoptera and Lepidoptera) comprise the superorder Amphiesmenoptera ("dressed-up wings"). However, caddisflies have hairs on their wings while moths have flattened scales. Although some male caddisflies have some flattened scales, the distinction is usually clear. The wings are generally held roof like when folded over the body. Unlike moths and butterflies, which typically have a coiled, tube-like proboscis for feeding, adult caddisflies lack well-developed mouthparts, including the absence of mandibles, but have a well-developed haustellum which is used to lap up liquids. The adults often occur in very large numbers swarming near or on freshwater habitats. Most species are nocturnal or crepuscular and can be taken in light-traps.

Like lepidopteran caterpillars, caddis larvae are capable of spinning silk from specially modified salivary glands. The three currently recognized suborders are largely characterized by differences in the way this silk is utilised by the larvae. The case-building ones are well known but others spin nets to filter-feed or else are free-living predators. However even the free living larvae such as *Rhyacophila* lay down a strand of silk as they move. This is a safeguard against drifting. All construct shelters in which to pupate. Most larvae can be classified as collectors, predators, scrapers and shredders there is considerable flexibility in behaviour. These categories are defined as (1) collectors are filter feeders and gatherers of suspended or loosely deposited fine organic particles; (2) predators are carnivores whose food items are animal prey; (3) scrapers (grazers) which nibble and scrape periphyton and fine organic materials on rocks and vegetation and (4) shredders feed on decomposing vascular plants.

The diversity of microhabitats exploited by them is undoubtedly a consequence of the many uses to which the silk has been put and an important reason for their success. At present, over 14,500 species, placed in 49 families and about 616 genera, have been described from all faunal regions except Antarctica, but it has been estimated that the world fauna may contain as many as 50,000 species.

Many species have rather narrow ecological requirements as larvae. As a result, subtle differences in species diversity can be a useful indicator of freshwater quality leading to the detection of pollution. Extensive use of Trichoptera has been made for this purpose since the taxonomy of the group is relatively well known for temperate regions. They are of little economic importance as pests but are beneficially important in the trophic dynamics and energy flow in aquatic ecosystems. For further information see Holzenthal *et al.* (2010) and Barnard and Ross (2012).

A history of Irish caddisfly studies including autobiographical notes

Irish caddisflies have been studied for over 180 years and have attracted the attention of many interesting entomologists, both amateur and professional. The first appears to have been the remarkable John Curtis (1791-1862) who was born in Norwich, England (Anon., 2013). In 1824 he began his greatest achievement, *British Entomology; being illustrations and descriptions of the genera of insects found in Great Britain and Ireland*, widely considered one of the finest works on the subject of the nineteenth century. It was published monthly by subscription, each instalment featuring four plates with two pages of text to accompany them. The finished work comprised sixteen volumes covering 770 insect species (Anon. 2013). In this work, he reported the first known record of an Irish caddisfly (Curtis, 1836a). On 27 May 1833, Mr Hyndman of Belfast made observations on a female *Phryganea grandis* at the Botanic Garden, Belfast. The full text is given under that species entry in the present volume.

Curtis was a great friend of the renowned Irish entomologist Alexander Henry Haliday (Nash, 1983; Nash and O'Connor, 2011). In 1833, he wrote to him that he would like to go to Ireland but that bad health and an empty house prevented it. At that time, he had experienced dysentery and when he got back to his house, he found scarlet fever there. After the scarlet fever, his wife appears to have taken the children to the countryside. However, he did manage to visit Ireland in 1835. Writing to Haliday, he mentioned that "it will delight me much to shake you by the hand on my arrival". Curtis missed his first boat at Bristol and had to take another steamer, the *Killarney*. After setting off, this had engine trouble and was finally towed back to port. Apparently, the boat had a narrow escape from foundering. Finally, Curtis got a passage to Cork on the *Victory* (Ordish, 1974).

From the text in *British Entomology* and extracts from his diary, he appears to have travelled widely with Haliday and collected caddisflies. There are references to Dublin, Glengariff [Glengarriff] (County Cork), Lake of Killarney (County Kerry), Galway, Roundstone in Connemara and the steam boat on Loch [Lough] Derg (County Clare). The last named was a useful source of specimens for he obtained two species on it. In the text for plate 561 on *Chimarra marginata*, he remarks that "In a tour through the south-west of Ireland last July, Mr. Haliday and myself observed the Eriocaulon in abundance, in various lakes from near Oughterard to Roundstone in Connemara" (Curtis, 1835). The Eriocaulon refers to the plant *Eriocaulon septangulare* (Joined Pipewort) shown in the plate (see fig. 4). In *British Entomology*, he mentions only four of his captures viz. *Hydropsyche instabilis* Curtis, *H. hibernica* Curtis (now *H. pellucidula*), *H. ventralis* Curtis (now *Cheumatopsyche lepida*) and *Chimarra marginata* (curiously *Chimarra* is mentioned as Irish in the folio (No. 716) dealing with *Molanna angustata,* Curtis (1838) stating "An ample series of fine specimens of Chimarra, which I found in vast abundance in Ireland, enabled me to study its affinities"). The National Museum of Ireland possesses pinned caddisflies taken by Haliday but with no locality data. However, they are most likely from his collecting trips with Curtis in Ireland.

Arturs Neboiss (1963) published a very useful account of the Curtis Collection in the National Museum of Victoria in Melbourne, Australia. This revealed further Irish records and also clarified the validity of the Curtis material. Altogether eight species are listed. These are: *Hydroptila angulata* (Dublin, 6 August (most probably *H. angulata*)); *Neureclipsis bimaculata* ("29 & 31 July in abundance on the steam boat on Loch Derg & on the bridges going through Connemara"); *Polycentropus flavomaculatus* (Lake of Killarney, July); *Polycentropus irroratus* (Galway, July); *Cheumatopsyche lepida* (as *H. ventralis*, Loch Derg, both sexes in July on the steam-boat, ♂ (lectoholotype) & ♀ (lectoallotype)); *Hydropsyche instabilis* (Curtis recorded the species from three Irish sites: Loch [Lough] Derg, Glengariff [Gelengarriff] and Galway but Neboiss showed that the ten specimens in the Curtis cabinet under *H.*

FIGURE 3. *Polycentropus irroratus* Curtis, 1835. Plate 544 from *British Entomology* (Curtis, 1823-1840). The species was collected by Curtis in Galway in July 1835.

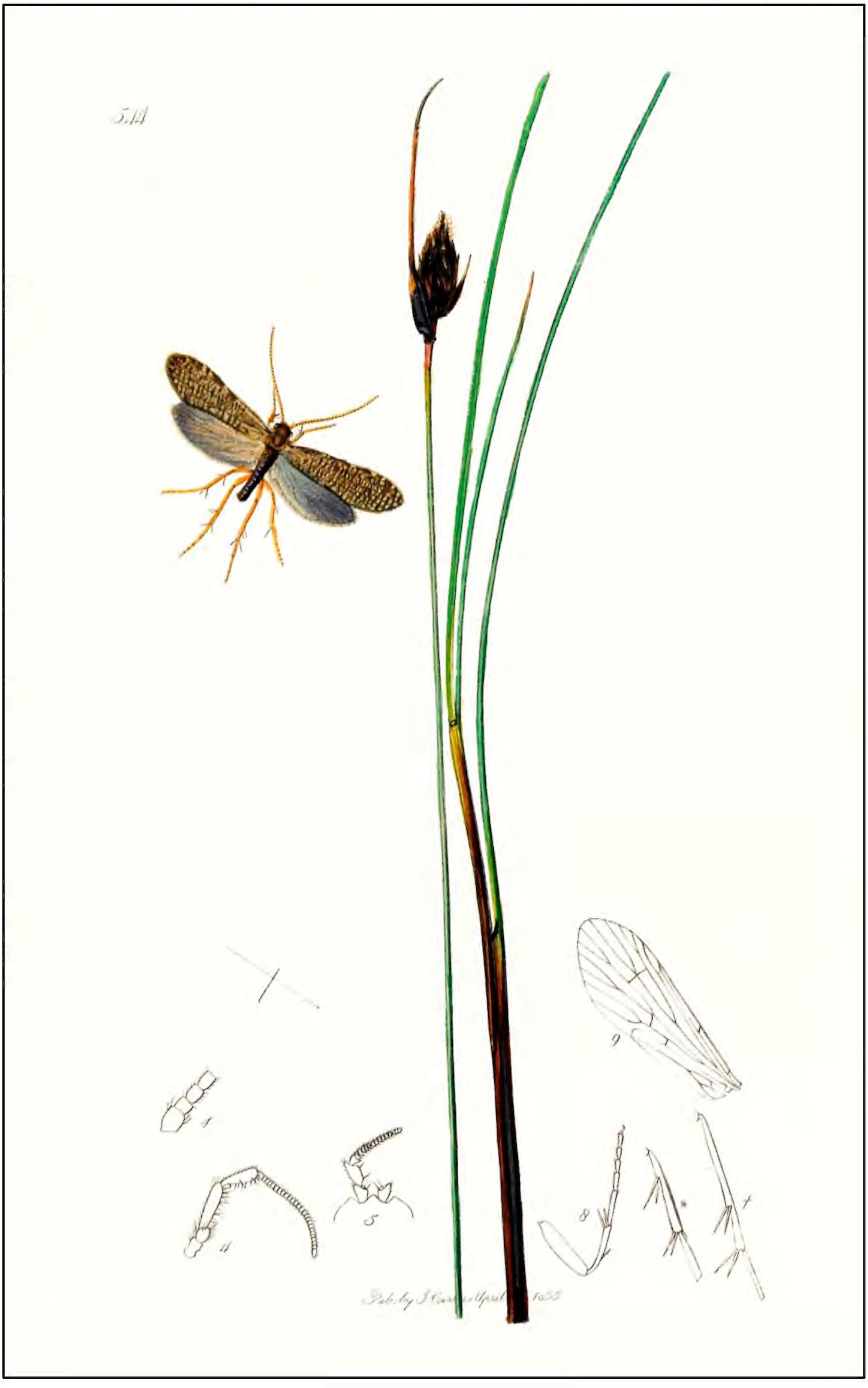
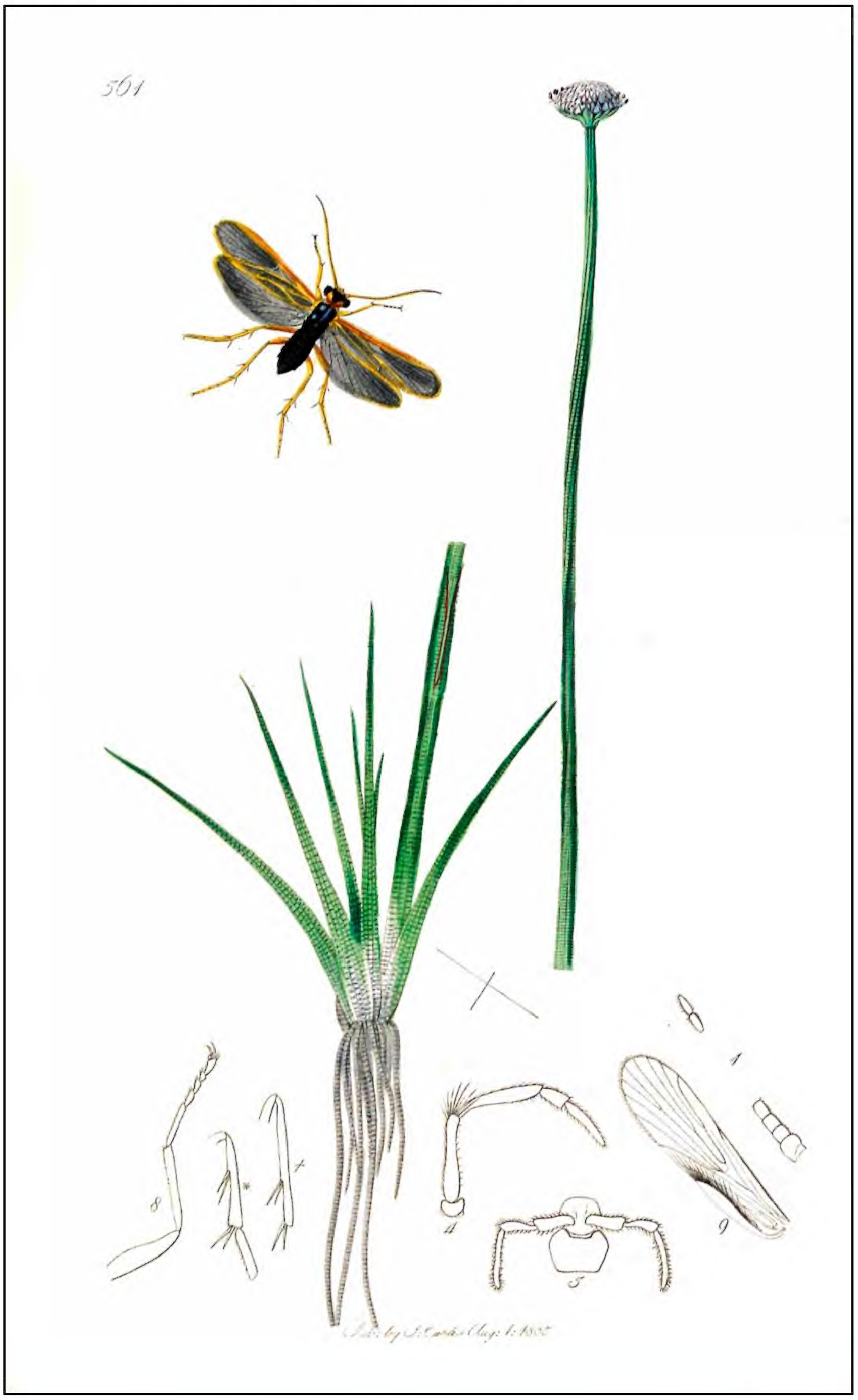


FIGURE 4. *Chimarra marginata* (Linnaeus, 1761). Plate 561 from *British Entomology* (Curtis, 1823-1840). The species was collected by Curtis in vast abundance in Ireland in 1835 (see text of Plate 716).



instabilis were not conspecific. Two were *H. pellucidula* and the sole specimen selected by Neboiss as type material is from England); *Hydropsyche pellucidula* (as *H. hibernica*, Roundstone in Connemara, ♂ end of July (Lectotype)) and *Athripsodes cinereus* (Connemara, July). In a letter to Haliday, Curtis remarked on his visit that "although our little success in Ireland is really astonishing when one considers the extent of country we passed over and I cannot help thinking that we should have done more if we had been earlier and had been on the coast next the open sea for Roundstone I found decidedly the best place but it was then rather late and having been rendered hors de combat I have little to show in proof of my assertion".

The Irish trip must have been arduous for Curtis considering the poor condition of the roads at the time and the discomfort of coach travel. However he had an easy passage to Holyhead, slept at Bangor and afterwards walked to see the Menai Bridge (Ordish, 1974). After the visit, he wrote to Haliday in October that "it was not until I had recourse to medicine that I got clear of the Galway Mulligrubs". Mulligrubs probably referred to an attack of colitis. Curtis hoped to return to Ireland the following May and June but never did. The colour plates of *Polycentropus irroratus* and *Chimarra marginata* from *British Entomology* are reproduced in the present work to celebrate the visit by Curtis to Ireland (Figs 3-4).

Another English entomologist, Robert McLachlan (1837-1904) had a lasting influence through the publication of his classic *A monographic revision and synopsis of the Trichoptera of the European fauna* (McLachlan, 1874-1880). This remarkable work was published in a series of sections and is still a useful key to-day. The monograph contains some Irish records but between 1861 and 1903, McLachlan authored another seven publications with Irish data. Two are of particular interest: (1877b) the description of *Setodes argentipunctellus* – most of the type series being from Killarney, County Kerry and (1885) records of caddisflies from Belfast. The latter reported on specimens collected by the English lepidopterist Charles G. Barrett (1836-1904). It is curiously evocative of the period with four of the species being taken at gas lamps. However, McLachlan's great achievement was that he provided a reliable identification manual - an asset which was put to good use by future entomologists on the Irish fauna such as J. J. F. X. King and K. J. Morton. Although he never visited Ireland, he had a keen awareness of the importance of making collections on the island "From the south-western portions of Ireland we might look for species that have their metropolis in the sunny climes of Spain and Italy" (McLachlan, 1862) and "Ireland has never yet been systematically worked for *Trichoptera*, and there is no knowing what good things may occur there" (McLachlan, 1877a).

James Joseph Francis Xavier King (1855-1933) was one of the most important researchers of the Irish caddisflies (Fig. 5). A Scot, he was *inter alia* a lecturer in drawing and architecture, perspective and geometry and librarian at the Glasgow

School of Art, and Lecturer in Economic Entomology at the West of Scotland Agricultural College in Glasgow. Each year, when the summer term ended, he would go immediately to which ever destination had been planned for that year and stay there for up to two months, sometimes longer. His holidays were spent in one area, dividing his time between collecting, pinning and setting insects. He was a prolific collector. Apparently common and widespread species were taken in large numbers in each place. This was then an excellent way of finding rare and unusual species 'hidden' among superficially similar kinds (O'Connor and Hancock, 2014).

From his labels, it is evident that he came to Ireland in 1886, 1887, 1888, 1891, 1902, 1910, 1911 and 1912. As a result, he collected widely over the island, visiting Connemara including Galway and Westport areas, Donegal (centred on Kilmacrenan), Dublin (including Lucan), and the Killarney and Kenmare districts of County Kerry, the Athlone area, Waterford and Wexford counties. Although, he captured a wide variety of groups, he was particularly interested in neuropterous insects (*sensu lato*). As a result, large numbers of caddisflies were taken. Following his trips of 1886-1888, he compiled *A contribution towards a catalogue of the neuropterous fauna of Ireland*. Based mainly on his own research, it also incorporated records and specimens sent by other entomologists. The catalogue was first published in *The Transactions of the Natural History Society of Glasgow* in 1888 and the following year (1889) published as a booklet by the Society at its rooms in Bath Street, Glasgow. It lists 103 species of Trichoptera in 28 genera - a great achievement. However King asked the reader to remember that "this list, so far as being in any sense intended as an exhaustive catalogue of the Irish Neuroptera, is designed rather as a first attempt to supply an outline of the local distribution of an order of insects which, in Ireland at least, has hitherto been almost entirely neglected". He goes on to request specimens and the kind co-operation of other workers, being glad to embody in a supplementary list the information so supplied to him.

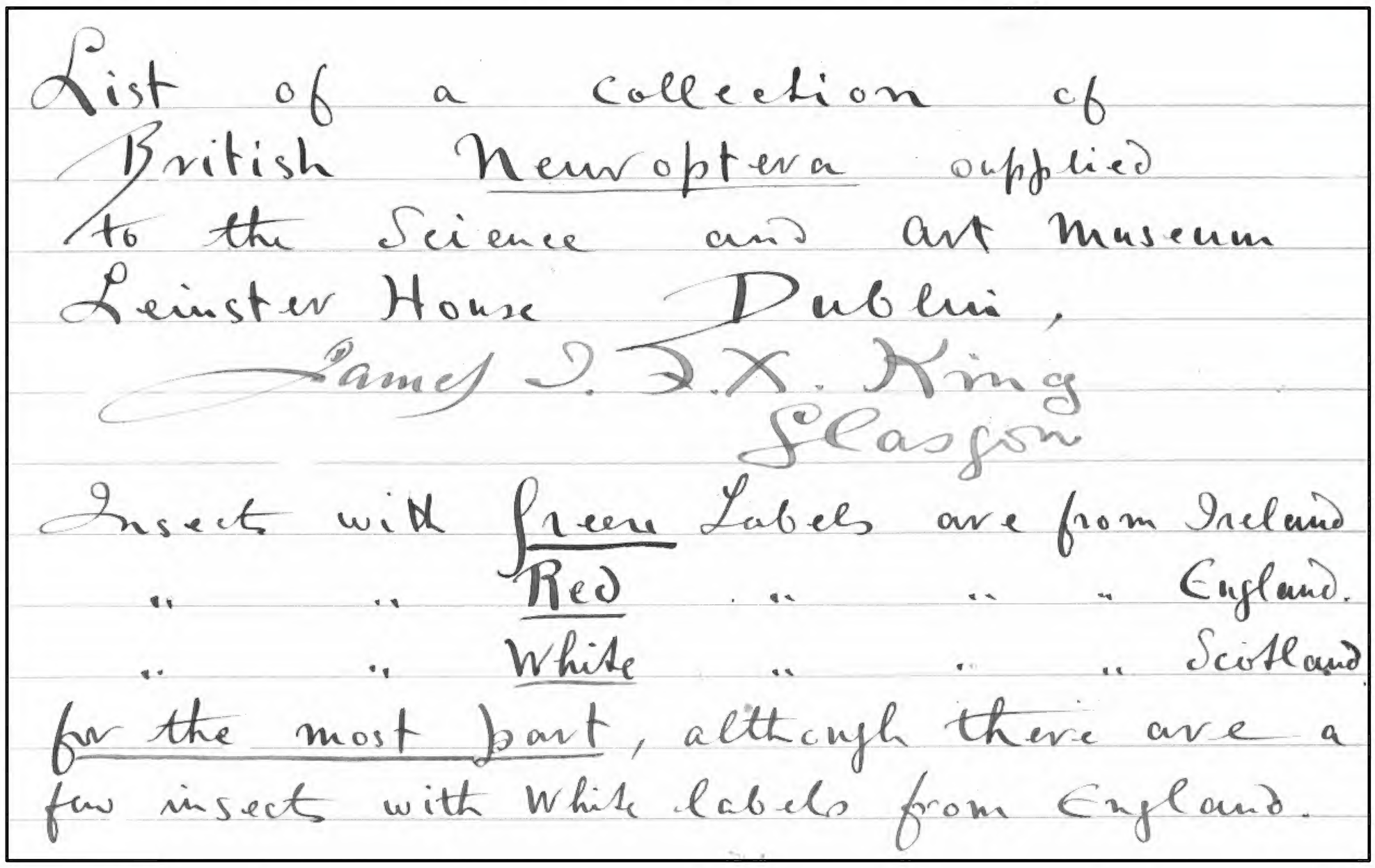
King continued his Irish trips and his appeal also met with success. As a consequence, "A list of the Neuroptera of Ireland" was published in 1910 in the *Proceedings of the Royal Irish Academy*. Co-authored with James N. Halbert, the list added another 11 species of caddisfly to the Irish fauna and greatly increased the knowledge of the group's distribution on the island. A total of 114 species was now known including four species not reported from Britain viz. *Limnephilus fuscinervis*, *Apatania fimbriata* (now *Apatania auricula*), *Tinodes maculicornis* and *Agapetus delicatulus* (since found in Britain). It is interesting that the first three are still unknown in Britain over a hundred years later. In his 1888 catalogue, King thanked eleven people for their assistance and of these, four are recognisable as collectors of specimens:- Rev. A. E. Eaton, Rev. W. F. Johnson, W. F. de V. Kane and K. J. Morton. In the 1910 paper, 14 are acknowledged for collecting material and of course, Halbert and King could be added to that number of collectors. The authors noted –

FIGURE 5. A portrait of James Joseph Francis Xavier King (1855-1933) (The Hunterian Museum, Glasgow).

"There is little doubt that fresh discoveries await the assiduous collector of these interesting insects, especially amongst such small forms as are contained in the family Hydroptilidae". King left a lasting legacy. His main collection is in the Hunteriam Museum in Glasgow but his material can be found in other museums collections including the National Museum of Ireland. The specimens are usually nicely mounted,

well labelled and accurately determined. His meticulous attention to detail is demonstrated by the hand-written list of the caddisflies that he donated to the National Museum of Ireland (Figs 6-7).

FIGURE 6. The cover of the list of specimens presented to the National Museum of Ireland (then The Science and Art Museum) by J. J. F. X. King.


List of a collection of
British Neuroptera supplied
to the Science and Art Museum
Leinster House Dublin,
James J. F. X. King
Glasson
Insect with green Labels are from Ireland
" " Red " " " England.
" " White " " " Scotland
for the most part, although there are a
few insect with White labels from England.

Of those cited in the catalogue and list, the following deserve further attention: W. F. Johnson and K. J. Morton. However I will first deal with J. N. Halbert, King's co-author of the 1910 list.

James Nathanial Halbert (1871-1948) was one of Ireland's foremost entomologists. He was appointed a Labeller in the National Museum of Ireland in 1892 and an Assistant Naturalist in 1904. Thus began 30 years of highly constructive entomological curatorship in the Museum and more than 50 years as the premier cataloguer of the Irish insect fauna. Beirne (1985) gives a fascinating account of Halbert and brings him back to life. He was a cultured gentleman of complete integrity. He was short, wiry and tweedy, humorous and cheerful, brisk, neat and precise. In addition to the list, Halbert did other work on the Trichoptera. Although he was mainly interested in beetles, heteropteran bugs and water mites, he took on the Neuroptera for the Clare Island Survey as neither King nor Morton could spare time for the undertaking. This study was initiated on 13 April 1908 when a meeting of Irish naturalists in the National Museum decided that a survey should be carried out on one of the islands lying off the west coast of Ireland (Collins, 1985). Clare Island was selected and from 1909-1911, Halbert and other naturalists collected caddisflies and other insects there and on the adjoining mainland. However he admits that the

attention given to the Neuroptera (*sensu lato*) was very limited. Nevertheless, Halbert captured the first Irish specimens of *Limnephilus fuscinervis* on the wooded shores of Lough Lannough close to Castlebar, County Mayo. The caddisfly results from the Clare Island Survey were published three years later (Halbert, 1912).

FIGURE 7. A page from the list of specimens presented to the National Museum of Ireland (then The Science and Art Museum) by J. J. F. X. King.

LUNATUS, CURT.	18	Killarney Athlone.
IGNAVUS, M'L.	8	240 & 256 Westport. 176 = Rannoch.
NIGRICEPS, 2 GTT.	3	Rannoch.
CENTRALIS, CURT.	7	181 = Sutherlandshire.
VITTATUS, F.	9	Killarney, Athlone.
AFFINIS, CURT.	2	Athlone.
AURICULA, CURT.	16	240 to 250 Westport. 210 Aviemore. Killarney.
GRISEUS, L.	3	210 & 216 Aviemore.
EXTRICATUS, M'L.	2	Near Glasgow.
HIRSUTUS, PICT.	1	Athlone.
LURIDUS, CURT.	1	146 = Strathglass

Born in India and educated in England and Ireland, William Frederick Johnson (1852-1934) began collecting insects at the age of 11 but did not publish any scientific material until he was 33. A genial and kindly man, he was a schoolteacher and a clergyman in the Church of Ireland (anon., 1934; Beirne, 1985). Despite his late start, he became one of the two most voluminous publishers on the insects of Ireland. Most were on the Coleoptera, Hymenoptera and Lepidoptera but he did make some significant caddisfly discoveries including *Tinodes unicolor* and *Limnephilus nigriceps*. He contributed records both to King's catalogue and the subsequent list.

Kenneth J. Morton (1858-1940) was a Scottish entomologist. He was employed by a bank until his retirement in 1922. He was very knowledgeable of the Trichoptera and he had a long association with Robert McLachlan (Fraser, 1940; Killington, 1940). In 1887, he visited the Killarney district for a week with his friend J. J. F. X. King and discovered *Apatania auricula* there (then misidentified as *A. fimbriata*). (Fig. 8). He gives a lovely account of the find stating that the species "occurred at spots where the margins of the lake were lined with huge blocks of rock". In 1883 and 1887, a Scottish woman, Miss A. B. Freeland of Uddington, sent him several batches of Trichoptera which she had collected in the neighbourhood of Glaslough (also spelt Glasslough), County Monaghan. Some had been taken in 1886. She was undoubtedly staying at Castle Leslie at the time. Many new or rare species were represented including the first Irish specimens of *Tinodes maculicornis*. Ms Freeland's specimens encouraged Morton to revisit Ireland in 1892 and 1916 to collect at Glaslough and its neighbourhood. He then added further species to the Irish fauna. His collection is in the National Museums of Scotland, Edinburgh.

Irish caddisflies were neglected for ten years after 1916 due to civil unrest. The Easter Rising occurred in Dublin from 24-29 April 1916 and was followed by the Irish War of Independence against British rule and then the Irish Civil War. The island was partitioned with separate administrations in the Irish Free State and six of the Ulster counties in Northern Ireland.

Martin Ephraim Mosely (1877-1948) was born in Newcastle on Tyne, Northumberland, England. Barnard (2010) provides a marvellous account of his life. A banker by profession, his interest in freshwater insects seems to have grown from his fly-fishing background. He was a well-known figure on some of the famous trout rivers of southern England. It is interesting to note that when he applied to join the Royal Entomological Society, his application was seconded by Morton. Mosely recognised the need for a practical handbook to the freshwater insects used by anglers and he devoted much of his spare time to a wide-ranging study of the Ephemeroptera, Plecoptera and especially Trichoptera. His earliest papers on the caddisflies concerned the minute Hydroptilidae, a family that always remained one of his favourites. He visited Ireland in 1926 and 1929 on angling holidays but of course collected caddisflies and other aquatic insects. His first paper was published in the *Salmon and*

FIGURE 8. An adult of *Apatania auricula* (Forsslund, 1930) at Loppi Lake, Finland © Esko Viitanen.

Trout Magazine (Mosely, 1927). Entitled "GALWAY TROUT", it is a most entertaining account of his visit. A list of his caddisfly captures is given on the last page. In his second (1930) paper, he stated that "In August of 1926 a kind friend invited me to spend a few days with him in Galway and catch some of his sea-trout. As I had never visited that part of Ireland before I accepted with alacrity the welcome invitation, the more particularly as I was anxious to investigate the Trichopterous fauna of a peat region the like and extent of which is hardly to be met with in our portion of the British Isles. From my friend's estate at Inverin stretching through Connemara almost to the sea is a wild waste of peat-moor, bog and boulders of all sizes, with pools and lakes to be numbered by thousands. Here and there is a little stream perhaps stringing up a chain of lochs and discharging into the beautiful waters of Galway Bay, or perhaps into one of the fjord-like inlets that margin the Connemara coast-line". While fishing in Ireland, he had a narrow escape from drowning when his waders filled with water and he lost his balance. Mosely, however, "remained quite calm and collected, pipe in mouth and rod in hand and swam to the other bank". His life was saved by the absence of a belt which would have kept his waders full of air, leaving him unable to swim (Barnard, 2010). He added several species of Hydroptilidae and *Limnephilus coenosus* to the Irish list. Among the numerous records, he also reported *Leptocerus interjectus*, *Lepidostoma fimbriatum* and *Mystacides azurea* var *albicornis* nov. The last-named variety had unicolorous white antennae. He later (1939) authored that marvellous book *The British Caddis Flies (Trichoptera). A collector's handbook*.

Winifred E. Frost (1902-1979) was born at Crewe, England. She worked in the Irish Fisheries Service. She assisted Rowland Southern in the River Liffey survey, a pioneering study comparing the food and growth of trout in acid and alkaline waters, and directed it after his death. She joined the Freshwater Biological Association in 1938 (Reynolds, 1998). She contributed to the knowledge of the Irish Trichoptera in her fourth paper of the River Liffey Survey *viz*. "The fauna of the submerged "mosses" in an acid and an alkaline water". In it, she gives both adult and larval records. The former were sent to Mosely. She identified the larvae but sent doubtful ones to Georg Ulmer in Hamburg and H. Whitehead in Leeds. While there are misidentifications, there is also useful information including *Rhyacophila munda* new to Ireland. The work is a pioneering one for not only are larval determinations attempted but there are also studies of the biology including seasonal distribution and ecology. Affectionately known as 'WEF', she was a fly-fisherwoman and is remembered for having a natural, warm and human interest in all whom she met, which virtue endeared her to many of them for life (Anon., 1980).

Bryan Patrick Beirne (1918-1998) was born at Rosslare, County Wexford and later came to live in Seapoint, County Dublin. He was interested in Entomology from an early age. At the remarkable age of sixteen, he entered Trinity College, and subsequently graduated with a Ph.D. in Entomology. He joined the staff there but later

emigrated to Canada in 1948. A large man, he was warm-hearted and genial with a great sense of humour. The author had the pleasure of becoming a friend and further details of Bryan's remarkable life will be found in O'Connor (1998). He was an expert on the Lepidoptera particularly the micromoths. He wrote "A list of the Microlepidoptera of Ireland" in 1941. He ran light-traps to collect the moths and as a by-product, trapped caddisflies in which he became interested. He also collected the group with a net. In 1939, he published a paper on his records which included *Halesus digitatus* new to Ireland. His specimens were identified by Mosely and are in the Natural History Museum, London. A paper on four years captures of insects in light-traps appeared in 1941 also with caddisfly data. Owing to electricity rationing in Ireland, it was not possible to operate any further light-traps during the Second World War. However Beirne and his friend Dick Harris did manage to run two traps in County Dublin in 1945. One of these was in a wooded valley of the River Liffey at Lucan and it provided the first Irish record of *Hydropsyche contubernalis* (as *Hydropsyche ornatula*) (Beirne and Harris, 1946).

John Richard Harris (1910-2008) was born in Dublin. Known as "Dick", he was an angler and gifted amateur entomologist. In recognition of his talent, he was appointed Honorary Lecturer in Limnology at Trinity College Dublin. His special study was Ephemeroptera (mayflies) but he was also interested in caddisflies. His book, *An angler's entomology*, is a classic work spanning the divide between fly-tying and insect ecology. He was a frequent visitor to see the author in the Museum both to discuss aquatic insects and to obtain spirit to preserve his specimens. He had compiled all of his Irish caddisfly data in a notebook. These were identified using Mosely (1939) and there are many useful records. He kindly gave the author permission to photocopy this work and to cite the relevant information in the present volume.

Michael Kennedy (1922-2009) was born and reared in Limerick. Growing up, he developed a huge interest in freshwater and marine angling. This led to a passion to understand fish and their habitats in Ireland. In the late 1940s, Kennedy was working as a civil servant in the Land Commission in Dublin and much of his leisure time was spent angling and collecting fish data in different waters. In 1951, he was headhunted to act as the first Secretary/General Manager of the fledging Inland Fisheries Trust and much of his professional life was spent working in the organisation as a fisheries biologist. Over his 23 year career with the Inland Fisheries Trust (now Inland Fisheries Ireland), he published many important papers on fish and a famous book *The sea anglers' fishes*. All were written in a captivating manner (Anon., 2009a). However the fame of his fish research has overshadowed the fact that Kennedy was also an excellent amateur entomologist with an interest in caddisflies. When I visited him as a student in his office in Westmoreland Street in the centre of Dublin City, I was received with great courtesy and interest. As we chatted away about Trichoptera, he produced a ms list of all his caddisfly records and gave it to me, with permission to

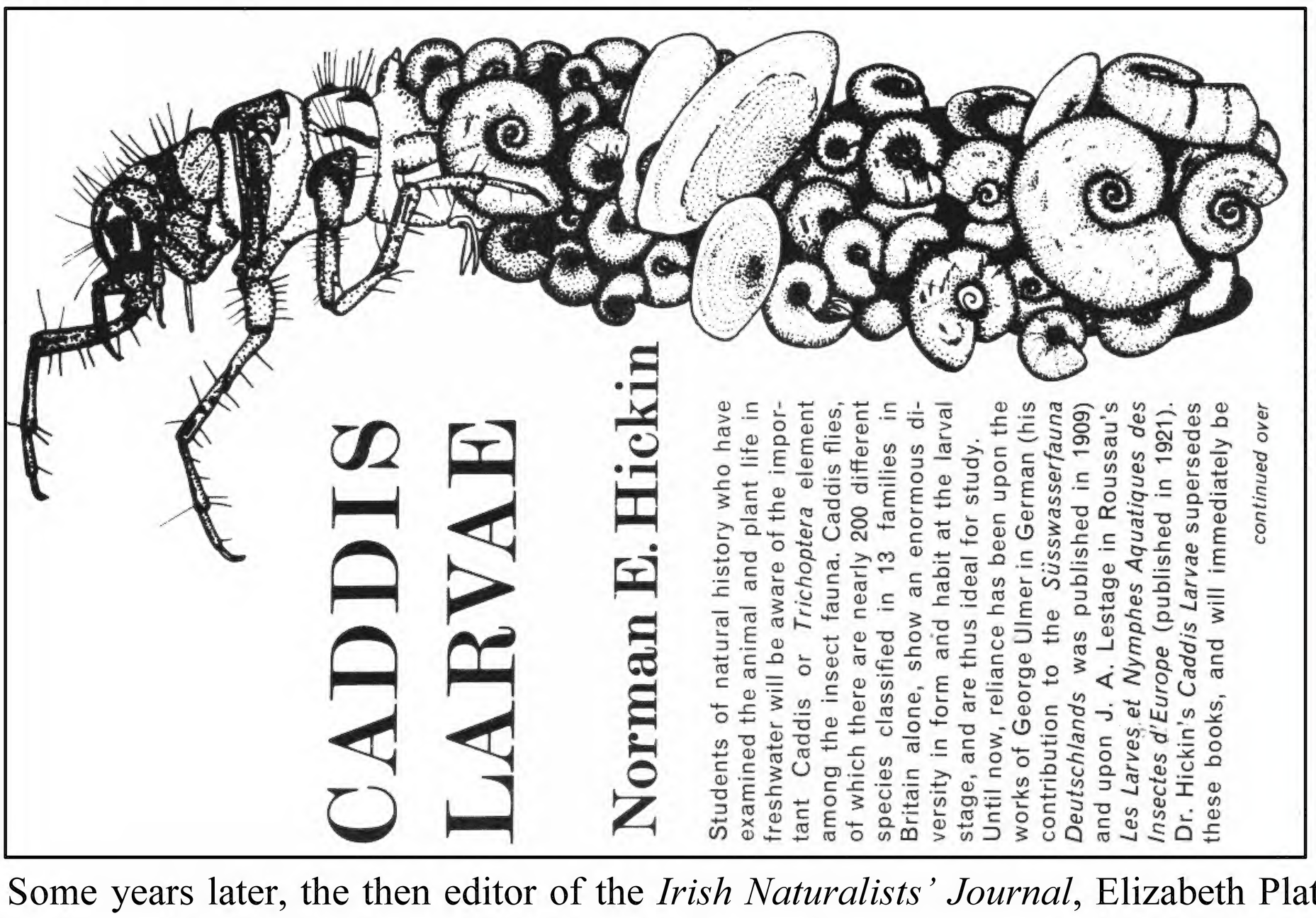
use the data whenever I wanted. The material was accurately identified using Mosely. It was a gesture which was typical of this brilliant gentleman. Subsequently, many years later, he visited me in the Museum to have some caddis larvae identified. He was going to have photographs of the specimens included in a planned book on trout angling. Alas, it was never completed.

Ted Pelham-Clinton (1920-1988) also visited me in Dublin and I greatly enjoyed discussing Trichoptera with him. Primarily a lepidopterist, he was also an expert on caddisflies. At an early age, he became interested in Lepidoptera when he lived in Somerset, England. In 1960, he joined the Royal Scottish Museum (now National Museums of Scotland), Edinburgh. He frequently visited Ireland on collecting trips during which he ran light-traps in which he captured moths and caddisflies. These specimens are preserved in the Edinburgh Museum. When I visited that Museum to examine the Morton Collection in 1980, Ted was a superb host and generously gave me access to all his identified caddisfly material with permission to use his Irish records as I wished. He was great company with a lovely sense of humour and had a wonderful knowledge of Italian cuisine developed while fighting in Italy during the Second World War. In 1988, he succeeded to the title of 10th Duke of Newcastle but died five weeks later. He was only 68 - a tragic loss. Shaw and Agassiz (1990) give a detailed account of the life of this remarkable entomologist.

Norman Ernest Hickin (1910-1990) was born at Aston, Birmingham in England. He was a dedicated entomologist, enthusiastic naturalist, wildlife artist and pest control scientist whose activities gave rise to a whole woodworm and dry rot control industry (Bateman, 1991). A prolific author of books, he illustrated them with his painstakingly detailed scraperboard and line drawings (Figs 9 and 519). His early work on caddis larvae was supervised by Martin Mosely. In 1967, his seminal work *Caddis larvae. Larvae of the British Trichoptera* appeared and it eventually encouraged the studies which resulted in the Freshwater Biological Association's keys to the British and Irish larvae. Beautifully illustrated and packed with information, it was exactly what Irish freshwater scientists were waiting for. I first met Norman in Reading at *The Second International Symposium on Trichoptera* when he was selling copies of his caddis book from the boot of his car. After his retirement, Norman became a frequent visitor to see the author in the Natural History Museum in Dublin. He was wonderful company full of good humour and a marvellous storyteller. His caddisfly work had a profound influence on Irish Trichoptera studies. Until its appearance, with the exception of Frost, emphasis was on the adults. Now it changed to the larval stage. Since it was a pioneering work, Norman's book had several shortcomings. Not all the species were included and keys could also lead to misidentifications such as Irish records of *Molanna angustata* and *Notidobia ciliaris*. John Edington (*in litt.*) remarked that "at first sight it seems well provided with family keys, however many of these are incomplete. In the opinion of the reviewer, four of the family keys can be

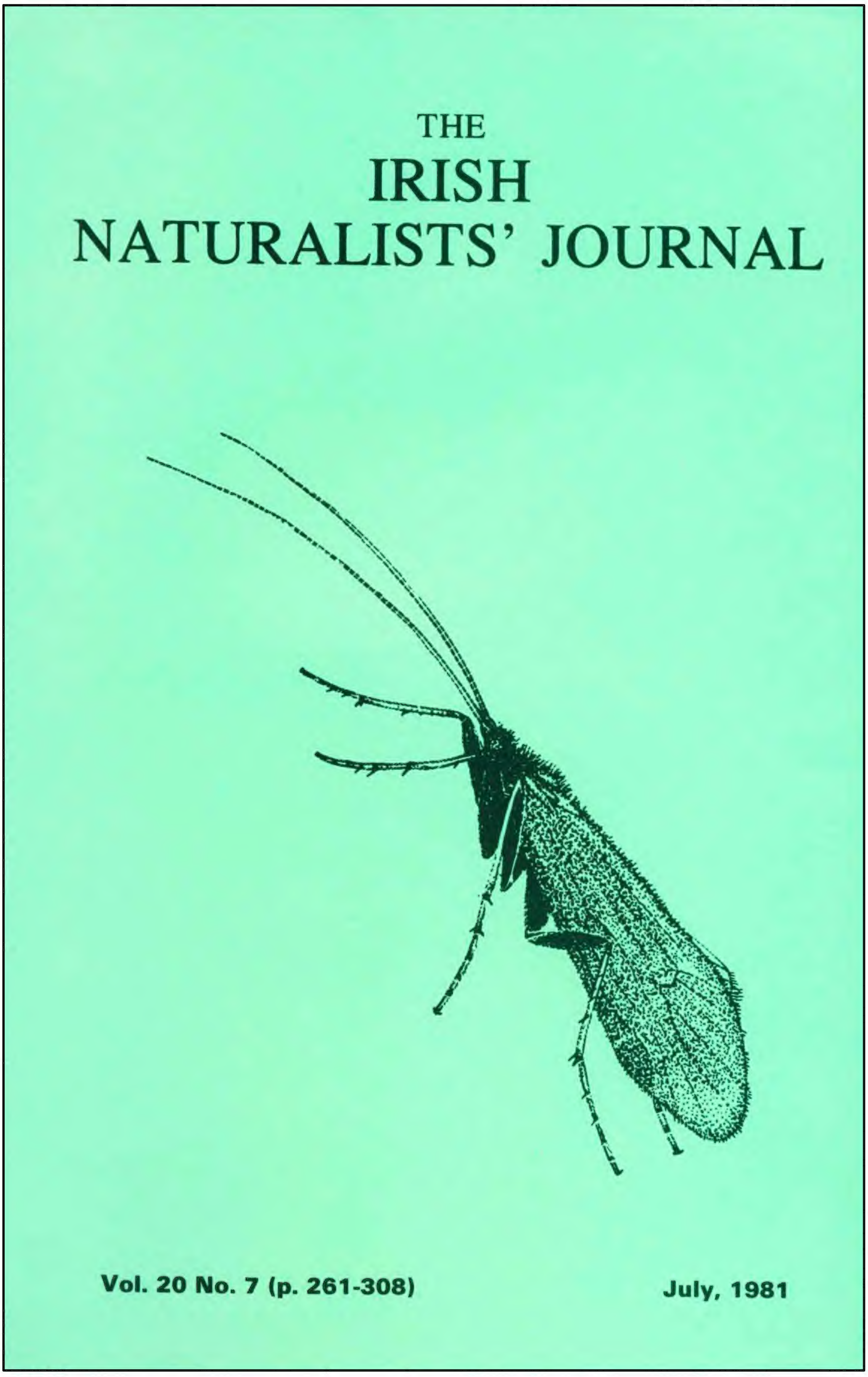
used with confidence. These are the keys to the families Rhyacophilidae, Glossomatidae, Polycentropidae (Polycentropodidae) and Beraeidae, comprising altogether twenty-seven of our 193 British species...Apart from the keys, the systematic section of the book consists of a series of single species descriptions, most of them derived from Dr Hickin's own papers. About 25 species can be identified with confidence from these descriptions". As Ian Wallace (*in litt.*) has pointed out concerning larval identifications using incomplete keys such as Hickin (1967) "I am always bemused by the illogical approach of these lists. It is as if they are saying – well there are three unknown species in this group but we can assume they are totally unlike the one known species, and isn't it lucky that what we have has never been recorded, must publish it now". Nevertheless in the absence of other keys, the book was in constant use by *inter alia* zoology students, limnologists and fishery scientists and useful research was published by among others Edward Fahy, Christopher Moriarty and Paul Toner.

FIGURE 9. A postcard from Norman Hickin.



Some years later, the then editor of the *Irish Naturalists' Journal*, Elizabeth Platts asked me if I would like to have a caddisfly on the cover of the journal. I was delighted and asked Norman would he do it. He readily agreed so I set off to Killarney where I collected adults of the "plain rail" *Apatania auricula*. These were sent to him alive in a container. Sometime later a beautiful scraperboard drawing arrived in the post with a note saying that Norman had done it while lying prone in bed due to a back injury. It first appeared on the journal's cover in July 1981 and was greatly admired (Fig. 10). The figure was also used for the back cover of *A checklist of Irish*

FIGURE 10. The front cover of the Irish Naturalists' Journal showing an adult of *Apatania auricula* (Forsslund, 1930) drawn by Norman Hickin.



aquatic insects (Ashe, O'Connor and Murray, 1998). Also in 1981, the German entomologist Hans Mendl (1927-2004) visited Ireland, returning in 1982, to collect aquatic insects including caddisflies. He gave the material to Hans Malicky who recently identified the specimens and very kindly passed on his list of determinations to me in 2013.

And now to some other personal reminisces. I was born in 1948 in Dún Laoghaire and lived on the Navan Road in Dublin. I wanted to be an entomologist from the age of six and enjoyed trout angling on the nearby River Tolka using caddis larvae (cor bait). I went to University College Dublin to study Zoology. In the third year of my undergraduate studies, I was given a Crawford Hayes Bursary for the summer. John Bracken, lecturer in limnology, gave me bottles of caddisflies from a four lake study and a copy of Mosely. I was told to identify the lot - a daunting task for someone unfamiliar with determining adults. However the quality of Mosely's book was so good that I know of only one misidentification from that work.

After graduation, as a result of an open competition, I was awarded a Studentship in Fisheries Sciences from the Department of Fisheries in Dublin. This was to carry out a limnological survey of two Irish lakes (Lough Dan in County Wicklow and Lough Sillan in County Cavan). The research was for a M.Sc. and involved comparative studies on water chemistry and the fauna particularly invertebrates. The lakes were far apart. Lough Dan could be reached easily from University College Dublin but once a month I had to spend a week in a caravan on the shores of Lough Sillan after travelling there on a 50cc motorbike. However, at long last, I was working on insects including caddisflies and these often came to the lighted windows of the caravan. Indeed, both lakes had rich caddis faunas. After a year, I was invited to do a Ph.D. and I discussed the matter with the head of the Zoology Department, Professor Carmel Humphries. A native of Waterford, she had initiated studies on the Irish Chironomidae and was very interested in Entomology (Murray, O'Connor and Ashe, 1999). She agreed that once I had finished the survey of the lakes, I would be allowed to work solely on the Irish Trichoptera as part of my degree. Thanks to Eileen Twomey, then an Inspector of Fisheries, the Department of Fisheries also agreed to fund my additional research which consisted of "A preliminary investigation of the Irish trichopterous fauna with particular emphasis on the Trichoptera of Counties Cavan, Clare, Kerry and Wicklow". The four selected counties are widely separated geographically and presented a good cross selection of the various trichopterous habitats available in Ireland. So in 1972, my caddisfly work had now started in earnest.

John Bracken, who was my supervisor for the lake study, was also to oversee my caddisfly research. A fish expert, he realised that he knew little about the group so he wisely arranged for me to visit the then British Museum (Natural History) in London and Ian Crichton (1913-2006) in Reading to seek advice, examine specimens and

amass literature. I received wonderful help over a three week period discussing Trichoptera. The opportunity was taken to look at all the Irish material in the museum collections. My time in Reading was very special. A Senior Lecturer in the Zoology Department, Ian had become interested in the anatomy of adult Trichoptera about 1950.

In later years, light-trap studies led to a long-term interest in flight-periods, distribution patterns and especially the life-histories of limnephilids (Barnard, 2006). Ian became interested in entomology while a prisoner of war in Germany during the Second World War. A navigator in a Stirling of Bomber Command, he was shot down while on a mission to Berlin. He was one of only three out of a crew of seven who survived but he broke his left leg on landing. This injury probably saved his life for he was not fit enough to take part in the Great Escape with its tragic sequel in the murder of 50 officers (Crichton, 1995). An unassuming and gentle man, I was entertained in his home "The Red House", shown the famous light-trap at Milbarn Pond and given unfettered access to photocopy anything that I wanted in his vast collection of reprints. At this time I also met one of his students, Peter Barnard, who became a lifelong friend. Peter wrote Ian's obituary (Barnard, 2006).

Returning enthusiastically to Ireland, I commenced work. My father bought me an old car and I started collecting adults, pupae and larvae over the four counties. Specimens were obtained with nets and Heath portable light-traps. The latter often caused consternation to courting couples in secluded pull-ins beside rivers and lakes for all they could see was the eerie light of the traps. I was met with great kindness and courtesy throughout the four counties, often being provided with free meals and accommodation. Otherwise I slept in a tent provided by my friends Martin and Mary O'Grady who also often helped me to run light-traps including when I met them by accident on their honeymoon in Waterville, County Kerry.

During my travels, permission to collect was always freely given whenever requested. As a result, I was able to obtain Trichoptera on very private properties. The sampling programme provided a wealth of information. In addition, material from all over the Republic was made available by the staff of the then An Foras Forbartha (now Environmental Protection Agency) and Inland Fisheries Trust (now Inland Fisheries Ireland).

At the same time, John Bracken had assembled a team of limnologists to investigate eutrophication problems in the Killarney lakes, County Kerry. One of the post-doctoral researchers was Edward (Ted) J. Wise who was responsible for identifying the macroinvertebrates. Ted was from Filey in North Yorkshire in England. A graduate of the University of Newcastle upon Tyne, he was an expert on mayflies (Ephemeroptera). However, he was also responsible for identifying caddis larvae in the Killarney study. We quickly became firm friends. As I used to spend a few days in Killarney every six weeks, we co-operated on collecting material and

discussed taxonomic problems. In Ted's old university, George Norman Philipson (1916-1991) was conducting research on the taxonomy of British Trichoptera larvae with a series of distinguished students including Peter Hiley and Ian Wallace. As a result, Ted and I had access to manuscript larval keys and in return provided comments and specimens. In 1974, Ian visited Ireland to collect larvae and I met him in Dublin. We instantly established a rapport and have been friends ever since. He generously provided me with numerous Irish records. Ted became a lecturer in University College Dublin but later resigned, for being a keen angler, he had achieved his life-long ambition of acquiring a trout fishery in Scotland.

In 1974, I met my future wife Mary Norton in University College Dublin. She was commencing a limnological study on the River Tolka under John Bracken for her undergraduate thesis. She became a trichopteran expert in her own right and subsequently, carried out research on the River Kilmastulla in County Tipperary where she discovered adults of the elusive *Oecetis notata*.

In 1975, I was awarded a Ph.D. for my research. My external examiner was the famous Thomas Townley (T. T.) Macan (1910-1985) of the Freshwater Biological Association and author of the F.B.A. handbook on the adults (Macan, 1973). Very happy with the thesis, he kindly absolved me from having to go through a *viva voce* examination. Usually called Kit, several years later, Mary and I had the privilege of having dinner with him and his wife in Carmel Humphries' home in Dublin when he was visiting University College Dublin as an external examiner for another Ph.D. candidate. Carmel Humphries knew him from her time in the Windermere Laboratory in the nineteen thirties. With only the five of us, it was a magical evening with much talk about caddisflies and other topics. Mary and I were invited to stay with the Macans in Windermere for a holiday but before we could take up the offer, Kit sadly died unexpectedly.

In April 1975, after an open public competition, I was appointed as the entomologist in the Natural History Division of the National Museum of Ireland and undertook the curation and rationalisation of the National Entomological Collections. John Bracken had wanted me to do a post-doctoral fellowship on the River Caragh in County Kerry which would lead on eventually to a lectureship in the Department of Zoology at University College Dublin. However, Carmel Humphries advised me to apply for the Museum post, saying that it had wonderful potential for entomological research. She was correct and I never regretted accepting her advice. Later, Colette Dowling took the fellowship and as a hobby, Martin O'Grady and I decided to join her in the research work. The River Caragh was rich in caddisflies and yielded the first Irish males of *Hydroptila tigurina* and the then unknown female. The post of entomologist should have been appointed at Assistant Keeper I grade but I had been given a lower grade due to a government embargo. However the Museum fought hard to have the right grade assigned and four years later in 1979, I was promoted to the

post of Assistant Keeper I in the Division. Between 1975 and 1988, I did some very productive caddisfly research along with work on other groups. There was a constant flow of Irish specimens for identification/confirmation from students and naturalists including Paddy Ashe, Ken Bond, Paddy Gargan, Jervis Good, Declan Murray, Ciaran O'Keeffe, Martin O'Grady, Jonathan Shackleton, Pascal Sweeney and Ken Whelan (for full list, see the acknowledgements). This material contributed greatly to the present book as have more recent records provided by Martin Gammell. Colette Dowling gave me interesting specimens which she had collected in Iran (O'Connor and Dowling, 1986). In addition, I had the opportunity to completely revise the National Collection of Trichoptera which led to the discovery of a species new to science - *Limnephilus pati* - which I named after my late father. Hans Malicky provided great help with its description.

When I first joined the Museum, the Director was Anthony T. Lucas (1911-1986). Known as a stern disciplinarian, he used to occasionally call me into his office when I arrived in the morning. A buzz would go around the Museum that someone was in trouble. The truth was more prosaic: Dr Lucas only wanted to talk about pond insects in which he had become interested as a child. He was particularly fascinated by caddis larvae and their case architecture. During one of these chats, he asked me if I could donate my collection to the Museum and I was delighted to oblige him. The Museum later gave me great freedom to carry out field work under another three Directors: Joseph Raftery, Brendan Ó Riordáin and Pat Wallace. The Keeper Colm O'Riordan also gave every support and encouragement. I was able to attend Trichoptera Symposia in Reading, England, in 1977, and Lyons, France, in 1986, where I presented papers on the Irish caddisflies (O'Connor, 1978a, 1987); I met many famous trichopterists at these meetings. At the former, I first became friends with Ollie Flint and Hans Malicky. Visits were also made to examine Irish caddisfly collections in the then Royal Museum of Scotland in Edinburgh, the Hunterian Museum in Glasgow and the Natural History Museum in London. Over the years, my research on these collections was generously assisted by Peter Barnard, Geoff Hancock, the late Ted Pelham-Clinton and Mark Shaw.

Mary and I were now living in Castleknock, County Dublin. Ian Wallace and his wife Brenda came to stay with us to collect larvae and on this field-work, we found the then unknown larvae of *Limnephilus fuscinervis*. Their larval expertise yielded many other exciting records. Peter Barnard also visited us as did Oliver Flint, his wife Carol and Andy Nimmo. Andy was one of the many trichopterists who had confirmed my identifications as a student while Ollie was the Curator of neuropterid orders (including Trichoptera) in the Smithsonian Institution (National Museum of Natural History) in Washington. We learned a huge amount from these visitors. The Flints, after their stay in Castleknock, went off on a collecting tour of the Republic of Ireland and later sent me a long list of all their caddisfly captures (Fig. 11). This has been a

very important source of data. However, my caddisfly research was to be soon interrupted.

The then Keeper, Colm O'Riordan, took early retirement in February 1988 and due to Government cutbacks, the position was abolished. This left me in a quandary as the now most senior officer in the Division since the Office of Public Works (OPW) were planning major renovations in the Natural History Museum including rewiring the building. At the request of my friend Pat Wallace, who had become the new Director, I took on the responsibilities of Keeper in order to safeguard the collections. I had little idea that I would be in an administrative limbo for such a long time. From 12 February 1988 to 6 March 1998, I acted as the unpaid Keeper of the Division in addition to my paid duties as the Museum's entomologist since the Government continued to maintain that the post of Keeper had been abolished due to the early retirement scheme. During this period, I was in charge of many major works in the Natural History Museum (e.g. rewiring, repainting, restoration, installation of fire doors and also a new heating system). Each time, the collections had to be protected from plaster dust etc. After the installation of the new heating system, the opportunity was taken to celebrate the bicentenary of the Natural History Museum on 26 June 1995 (O'Connor, 1996). I was also responsible for obtaining the Natural History Building, Beggar's Bush, Dublin, and for having it completely renovated as a stores for the Division. I oversaw and co-ordinated the transfer of the zoological and geological collections from seven separate storage facilities to this new building. The administrative duties were onerous including endless meetings, reports, budgets and enquiries. Somehow, I managed to maintain much of my curatorial work and some entomological research but the caddisfly work suffered. In 1992, I attended the 7th International Symposium on Trichoptera in Umeå, Sweden, and presented a paper on the Trichoptera of the Isle of Man, co-authored with Brenda and Ian Wallace (O'Connor, Wallace and Wallace, 1993). In the same year, with Paddy Ashe, I published a description of the small and enigmatic hydroptilid *Jabitrichia wellsae* O'Connor and Ashe from Tasek Bera in Malaysia (O'Connor and Ashe, 1992). The species has since been found in Thailand (Malicky, 2010). In 1998, I updated the 1987 checklist of Irish Trichoptera in *A checklist of Irish aquatic insects* co-authored with Paddy Ashe and Declan Murray (Ashe, O'Connor and Murray, 1998). A total of 147 species was listed, an increase of four species. The volume was published by the Irish Biogeographical Society to celebrate the holding of the XXVII Congress of the International Association of Limnology in University College, Dublin, in August1998 and dedicated to Dick Harris. The larval head of *Tinodes maculicornis*, drawn by the author and from O'Connor and Wise (1980), appeared on the front cover (Fig. 12).

On 6 March 1998, my dedication and achievements were recognised by the Government and I was promoted to the newly re-established post of Keeper of the Natural History Division and the Natural History Museum. However, by this time, I

wanted to get back to entomological work so I waited for two years until I knew that the position was secure and that a replacement would be appointed. I then applied to Pat Wallace for permission to step down and resume my insect duties. My request caused consternation as it had no precedent in the Museum's history. However the Director was wonderfully supportive and my request was finally granted on 22 December 2000 by the then responsible Government Department. Generously, the Department retained me on the Keeper's salary until a successor was appointed.

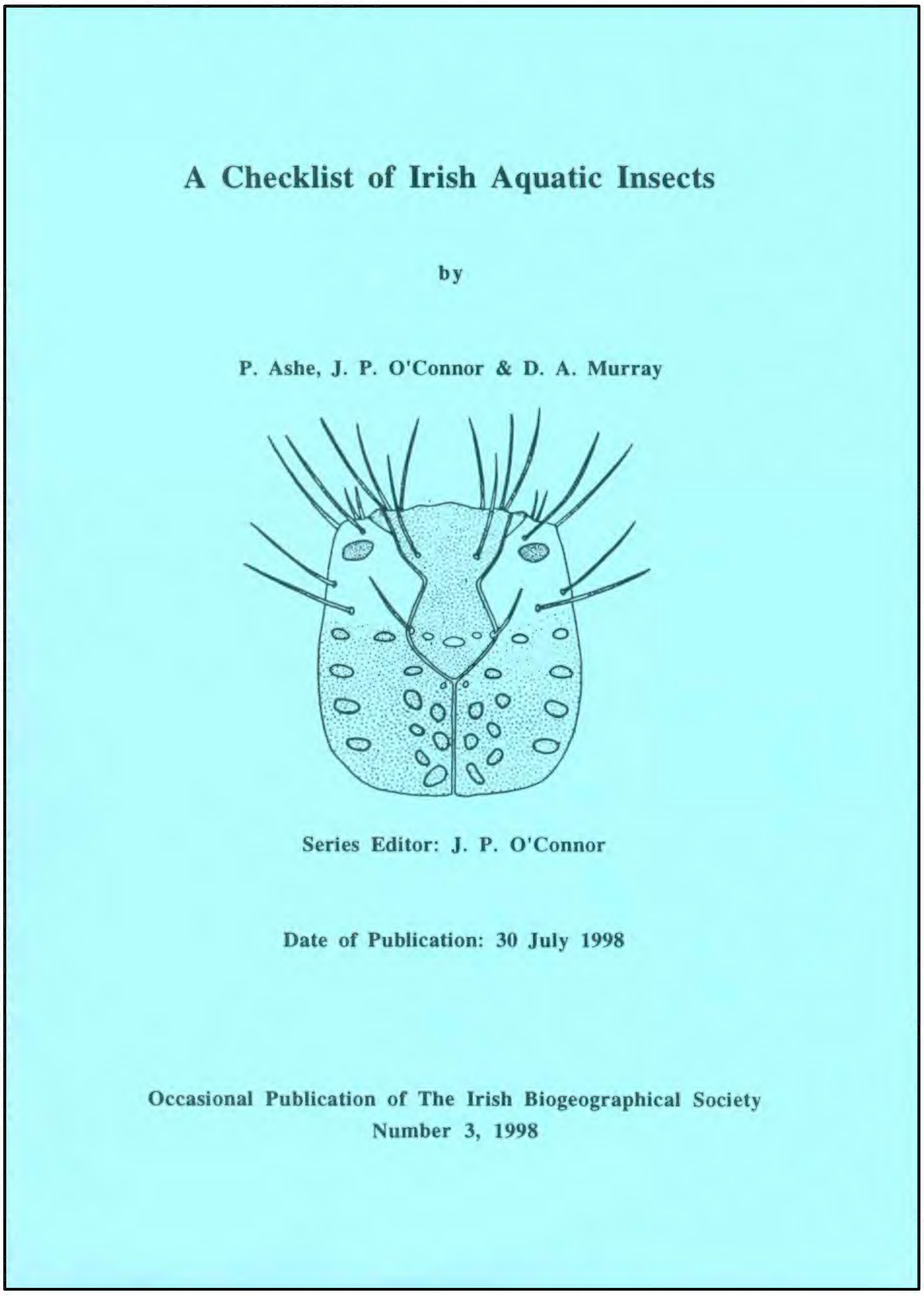
So I was finally back as the Museum's entomologist but a backlog of curatorial work had accumulated. In addition, the checklisting of the Irish insect fauna and other

FIGURE 11. A recent photograph of Ollie and Carol Flint.

research projects remained to be completed. However I attended the 10th International Symposium on Trichoptera in Potsdam, Germany, and presented a joint paper there with Paddy Ashe on chironomid associations with Trichoptera (Ashe and O'Connor, 2002). In addition, thanks to the kindness of Hans Malicky, papers were completed on

some new caddisflies from Sulawesi, Indonesia (also with Paddy Ashe and Colette Dowling) (Malicky and O'Connor, 2006; Malicky, O'Connor and Ashe, 2009; Malicky *et al*., 2011). It had not been possible to examine this material until I stepped down.

FIGURE 12. The front cover of *A checklist of Irish aquatic insects* showing the larval head of *Tinodes maculicornis* (Pictet 1834) drawn by J. P. O'Connor.



Braueria, the Trichoptera Newsletter, is essential reading for anyone interested in caddisflies. Edited by Hans Malicky, the journal contains a wealth of information. From its inception at the First International Symposium on Trichoptera until 2004, Ian Crichton helped with the editing of English texts by non-native speakers. Due to age, he then decided that it was time to step down. I was delighted when Hans asked me to

take over Ian's role and have happily carried out that work since 2005. In the same year, I had the great honour of being elected a Member of the Royal Irish Academy.

I retired in 2010 having established a comprehensive collection (both pinned and spirit) of Irish Trichoptera in the Museum. The opportunity was now taken to complete the basic checklisting of the Irish insects (O'Connor, 2013a). The final volume *An annotated checklist of the Irish Hemiptera and small orders* appeared in 2012 and contained a new checklist of the Irish Trichoptera (O'Connor and Nelson, 2012). Altogether 150 species are listed, an increase of three species compared with the 1998 list but two of these are now considered to be invalid.

Also with retirement, came the possibility of completing my other Irish caddisfly research and of writing this book. So Mary and I went caddisfly collecting together again to fill in some of the known gaps in the Irish distributions. For a long time, due to the troubles in Northern Ireland, it was not considered wise to run light-traps for caddisflies there. However with the peace process, we have recently made several collecting trips to Northern Ireland. Ken Bond has greatly assisted this research by providing caddsflies from his light-trap work on Lepidoptera there. Indeed, since I first met him, Ken has generously provided many interesting specimens and records from all over the island. Some of these were new to Ireland or very rare species (e.g. O'Connor and Bond, 1995, 2015).

In recent years, there have been very active freshwater research groups working on *inter alia* caddis larvae in many of the Irish research institutions including National University Galway (under Kieran McCarthy), University College Cork (under Paul Giller), University College Dublin (under John Bracken and Mary Kelly-Quinn) and the University of Dublin (Trinity College) (under Ken Irvine etc.). Researchers such as Martin Gammell, Edel Hannigan, Narumon Sangpradub and Jonathan White have made significant contributions.

The National Biodiversity Data Centre held six separate data sets with Irish trichopteran records (mainly larvae) but these had not been integrated. Those that are cited are given in Table 1. Distributional data from this book have been provided to the National Biodiversity Data Centre and CEDaR as the data set "Caddisflies (Trichoptera) of Ireland". From this set, the Centre has done an excellent job of providing superb Irish National Grid or latitude and longitude (World Geodetic System 84) distribution maps for each species. The data set is being periodically updated and may be consulted at <https://maps.biodiversityireland.ie/Dataset/250>

The identification of Irish Trichoptera

Ian Wallace provides excellent general introductions (2003, 2004) to the group. Most Irish adult caddisflies may be readily identified using Barnard and Ross (2012). This work provides a wealth of information of direct relevance to the study of the Irish

TABLE 1. Irish data sets with trichopteran records from the National Biodiversity Data Centre used in this book.

Data sets used and how cited	**Data providers**
Insects – Caddisfly Records, Edenvale, Co. Wexford 2010 Mainly larval records but some adults included). Cited in the present publication as Gammell (2011).	Martin Gammell
Non-insect invertebrates – Littoral Macroinvertebrate data from Irish lakes (larval records). Cited in the present publication as Little and Free (2013).	Environmental Protection Agency
Various – EPA River Biologists Data (larval records). Cited in the present publication as Lucey (2015).	Environmental Protection Agency
Various – Biodiversity records from Ireland – general (larval records). Cited in the present publication as Anon (2015a).	Collated by the National Biodiversity Data Centre from different sources
Various – Ireland's BioBlitz (mainly larval records). Cited in the present publication as Anon (2015b).	Collated by the National Biodiversity Data Centre from different sources

Trichoptera. However, for the correct determination of a few Irish species, it is also worthwhile to consult Malicky's (1983, 2004) *Atlas of European Trichoptera*. In addition, the keys by McLachlan (1874-1884), Mosely (1939) and Macan (1973) are still relevant. Caseless larvae may be determined with Edington and Hildrew (1995) and the case-bearing ones using Wallace, Wallace and Philipson (2003). In addition to the taxonomic notes and keys, Edington and Hildrew (1995) contains interesting sections dealing with feeding biology, habitat distribution and life histories but unfortunately, the keys do not work for some Irish *Tinodes and Hydropsyche*. The authors did not use the full complement of identification characters drawn up by O'Connor and Wise (1980) after their examination of a large number of specimens of *T. maculicornis*. In *T. maculicornis*, labral pigmentation is widely distributed but it may be concentrated slightly around the points of attachment. As a result, *T. maculicornis* may be keyed out as *T. rostocki* or *T. dives*. Edington and Hildrew (1995) separated the larvae of *H. instabilis* and those of *H. fulvipes* and *H. saxonica* using frontoclypeal patterns. However, Statzner and Mondy (2009) showed that these patterns were within the colour pattern range of *H. instabilis*. Therefore specimens

determined as either *H. fulvipes* or *H. saxonica* actually may be *H. instabilis*. In the cased larvae, it is very important to realise that most species can be only identified with confidence in the later instars. The *Atlas of Central European Trichoptera larvae* by Waringer and Graf (2011) is a useful complimentary work. Wallace (1991) includes very valuable information on the habitat preferences of the British species, data which are often also applicable to the relevant Irish species.

Caddisflies (sedges) imitated with artificial flies by Irish anglers

The following are the more important caddisflies for anglers on Irish waters. The information is mainly from Harris (1956) and Kennedy (1968). *Agrypnia varia*/*Agrypnia obsoleta* – Peters (*Agrypnia varia* is the Green Peter or Speckled Peter while *Agrypnia obsoleta* is the Dark Peter); *Apatania auricula* – the Plain Rail; *Athripsodes aterrimus*/*Mystacides azurea* – Black Silverhorns; *Halesus* spp./*Limnephilus* spp./*Potamophylax* spp. – Cinnamon Sedges; *Halesus radiatus* – The Caperer; *Hydropsyche* spp. – Grey Flags or Grey Sedges; *Lepidostoma hirtum* – the Silver Sedge; *Mystacides* spp. – Silverhorns; *Mystacides longicornis* – the Grouse Wing (brown silverhorn); *Odontocerum albicorne* – the Grey Sedge; *Phryganea grandis*/*Phryganea bipunctata* – the Murrough or Great Red Sedge; *Sericostoma personatum* – the "Black Caperer" or Halford's Welshman's Button; *Tinodes* spp – the Red Sedge; *Tinodes waeneri* – the Small Red Sedge. An imitation of *Molanna albicans* is important on some Irish lakes in August but has no popular name.

Kennedy (1968) also provides information on the patterns and tying of the relevant trout flies, remarking that sedge imitations, unlike ephemeropteran ones, require a wing, using a feather often cut from the wing or tail of a game bird (e.g. pheasant) or other birds (e.g. rook). There are different imitations for the pupal and adult stages.

Wallace (2003) gives an excellent account of the emergence of Trichoptera which is of great interest to the angler. When full grown, all free-living and shelter dwelling caddis make a case of stones or plant debris, attached to a stone or large plant, in which to pupate; cased caddis larvae also attach their cases and then seal up both ends, apart from small grilles to allow passage of oxygenating water. To emerge, the adult, still in its pupal skin, cuts out of the case or shelter using special mandibles. It then rapidly swims to the surface of the water or the bank, using fringed legs. It is assisted in reaching the surface by a bubble of gas secreted between the adult and the skin. This however makes them appear as a silvery bubble that is very conspicuous to fish. Large numbers of caddis are predated at this time. Many species emerge at night when the fish cannot see them – but waiting Daubenton's bats can detect these juicy mouthfuls. A successful individual splits the pupal skin; the adult rapidly emerges expanding its wings in a few seconds as it wriggles out of the skin, and then flies to a nearby bush to dry its wings for a few minutes. The pupal shuck floats away, an empty husk.

Checklist of the Irish caddisflies

This checklist is based on O'Connor and Nelson (2012) with modifications of layout and some other changes including dates from Barnard and Ross (2012). There are three suborders in the checklist *viz.* the Specipalpia with free or case making larvae, the Annulipalpia with retreat makers (classically called caseless) and the Integripalpia with cased larvae. Since the publication of O'Connor and Nelson (2012), *Hydroptila valesiaca* has been added to the Irish list (O'Connor and O'Connor, 2013) while *Hydropysche fulvipes* and *H. saxonica* have now been deleted and require confirmation with adults or pupae. Only accepted species are given in the checklist. Deleted and doubtful species (including those requiring confirmation) will be found in the catalogue section.

SUBORDER SPICIPALPIA
Superfamily Rhyacophiloidea
Family RHYACOPHILIDAE
***RHYACOPHILA* PICTET, 1834**
***dorsalis* (Curtis, 1834) [1.]**
***munda* McLachlan, 1862 [2.]**
Superfamily Glossosomatoidea
Family GLOSSOSOMATIDAE
***AGAPETUS* CURTIS, 1834**
***delicatulus* McLachlan, 1884 [3.]**
***fuscipes* Curtis, 1834 [4.]**
***ochripes* Curtis, 1834 [5.].**
Synonymy: *Agapetus comatus* (Pictet, 1834).
***GLOSSOSOMA* CURTIS, 1834**
***boltoni* Curtis, 1834 [6.]**
Synonymy: *Glossosoma vernale* (Pictet, 1834).
***conformis* Neboiss, 1963 [7.]**
Synonymy: *Glossosoma boltoni* McLachlan nec Curtis.
Superfamily Hydroptiloidea
Family HYDROPTILIDAE
***AGRAYLEA* CURTIS, 1834**
***multipunctata* Curtis, 1834 [8.]**
***sexmaculata* Curtis, 1834 [9.]**
***ALLOTRICHIA* MCLACHLAN, 1880**
***pallicornis* (Eaton, 1873) [10.]**
***HYDROPTILA* DALMAN, 1819**
***angulata* Mosely, 1922 [11.]**
***cornuta* Mosely, 1922 [12.]**
***forcipata* (Eaton, 1873) [13.]**

***martini* Marshall, 1977 [14.]**
***occulta* (Eaton, 1873) [15.]**
***pulchricornis* Pictet, 1834 [16.]**
***simulans* Mosely, 1920 [17.]**
***sparsa* Curtis, 1834 [18.]**
***tigurina* Ris, 1894 [19.]**
***tineoides* Dalman, 1819 [20.]**

Synonymy: *Hydroptila femoralis* Eaton, 1873.

***valesiaca* Schmid, 1947 [21.]**

***ITHYTRICHIA* EATON, 1873**

***clavata* Morton, 1905 [22.]**
***lamellaris* Eaton, 1873 [23.]**

***ORTHOTRICHIA* EATON, 1873**

***angustella* (McLachlan, 1865) [24.]**
***costalis* (Curtis, 1834) [25.]**

***OXYETHIRA* EATON, 1873**

***falcata* Morton, 1893 [26.]**
***flavicornis* (Pictet, 1834) [27.]**

Misidentification: *Oxethira flavicornis* was misidentified as *Oxyethira costalis* (Curtis, 1834) (*sensu* Eaton) in the earlier Irish literature. This taxon should not be confused with *Orthotrichia costalis* (Curtis, 1834) given above.

***frici* Klapálek, 1891 [28.]**
***sagittifera* Ris, 1897 [29.]**
***simplex* Ris, 1897 [30.]**
***tristella* Klapálek, 1895 [31.]**

***TRICHOLEIOCHITON* KLOET AND HINCKS, 1944**

***fagesii* (Guinard, 1879) [32.]**

SUBORDER ANNULIPALPIA

Superfamily Philopotamoidea

Family PHILOPOTAMIDAE

***CHIMARRA* STEPHENS, 1829**

***marginata* (Linnaeus, 1761) [33.]**

Synonymy: *Chimarrha* (misspelling).

***PHILOPOTAMUS* STEPHENS, 1829**

***montanus* (Donovan, 1813) [34.]**

Synonymy: *Philopotamus scopulorum* Stephens, 1836.

subspecies *montanus* (Donovan, 1813)
form *scoticus* McLachlan, 1862 [34a.]

***WORMALDIA* MCLACHLAN, 1865**

***mediana* McLachlan, 1878 [35.]**

***occipitalis* (Pictet, 1834) [36.]**
***subnigra* McLachlan, 1865 [37.]**
Superfamily HYDROPSYCHOIDEA
Family ECNOMIDAE
***ECNOMUS* MCLACHLAN, 1864**
***tenellus* (Rambur, 1842) [38.]**
Family POLYCENTROPODIDAE
***CYRNUS* STEPHENS, 1836**
***flavidus* McLachlan, 1864 [39.]**
***insolutus* McLachlan, 1878 [40.]**
***trimaculatus* (Curtis, 1834) [41.]**
***HOLOCENTROPUS* MCLACHLAN, 1878**
***dubius* (Rambur, 1842) [42.]**
***picicornis* (Stephens, 1836) [43.]**
***NEURECLIPSIS* MCLACHLAN, 1864**
***bimaculata* (Linnaeus, 1758) [44.]**
***PLECTROCNEMIA* STEPHENS, 1836**
***conspersa* (Curtis, 1834) [45.]**
***geniculata* McLachlan, 1871 [46.]**
***POLYCENTROPUS* CURTIS, 1835**
***flavomaculatus* (Pictet, 1834) [47.]**
***irroratus* (Curtis, 1835) [48.]**
Synonymy: *Polycentropus multiguttatus* auctt. nec Curtis, 1835.
***kingi* McLachlan, 1881 [49.]**
Family PSYCHOMYIIDAE
***LYPE* MCLACHLAN, 1878**
***phaeopa* (Stephens, 1836) [50.]**
***reducta* (Hagen, 1868) [51.]**
***PSYCHOMYIA* LATREILLE, 1829**
***fragilis* (Pictet, 1834) [52.]**
Synonymy: *Lype fragilis*; *Metalype fragilis*.
***pusilla* (Fabricius, 1781) [53.]**
***TINODES* LEACH, 1815**
***dives* (Pictet, 1834) [54.]**
***maclachlani* Kimmins, 1966 [55.]**
Synonymy: *Tinodes aureola* auct., nec Zetterstedt.
***maculicornis* (Pictet, 1834) [56.]**
***unicolor* (Pictet, 1834) [57.]**
***waeneri* (Linnaeus, 1758) [58.]**
Family HYDROPSYCHIDAE

***CHEUMATOPSYCHE* WALLENGREN, 1891**

***lepida* (Pictet, 1834) [59.]**

Synonymy: *Hydropsyche ventralis* Curtis, 1836; *Hydropsyche angustata* Pictet, 1834; *Hydropsyche lepida.*

***DIPLECTRONA* WESTWOOD, 1840**

***felix* McLachlan, 1878 [60.]**

***HYDROPSYCHE* PICTET, 1834**

***angustipennis* (Curtis, 1834) [61.]**

***contubernalis* McLachlan, 1865 [62.]**

Synonymy: *Hydropsyche ornatula* auctt. nec McLachlan, 1878.

***instabilis* (Curtis, 1834) [63.]**

Many misidentifications which should refer to *Hydropsyche siltalai*.

***pellucidula* (Curtis, 1834) [64.]**

Synonymy: *Hydropsyche hibernica* Curtis, 1836.

***siltalai* Döhler, 1963 [65.]**

SUBORDER INTEGRIPALPIA

Superfamily PHRYGANEOIDEA

Family PHRYGANEIDAE

***AGRYPNIA* CURTIS, 1835**

***obsoleta* (Hagen, 1864) [66.]**

Synonymy: *Phryganea obsoleta.*

***pagetana* Curtis, 1835 [67.]**

***varia* (Fabricius, 1793) [68.]**

Synonymy: *Phryganea varia*.

***OLIGOTRICHA* RAMBUR, 1842**

***striata* (Linnaeus, 1758) [69.]**

Synonymy: *Neuronia ruficrus* (Scopoli, 1763).

***PHRYGANEA* LINNAEUS, 1758**

***bipunctata* Retzius, 1783 [70.]**

Misidentification: *Phryganea striata* Linnaeus, 1758.

***grandis* Linnaeus, 1758 [71.]**

Family GOERIDAE

***GOERA* STEPHENS, 1829**

***pilosa* (Fabricius, 1775) [72.]**

***SILO* CURTIS, 1833**

***nigricornis* (Pictet, 1834) [73.]**

***pallipes* (Fabricius, 1781) [74.]**

Family LEPIDOSTOMATIDAE

***CRUNOECIA* MCLACHLAN, 1876**

***irrorata* (Curtis, 1834) [75.]**

***LEPIDOSTOMA* RAMBUR, 1842**

***basale* (Kolenati, 1848) [76.]**

Synonymy: *Lasiocephala basalis* (Kolenati, 1848).

***hirtum* (Fabricius, 1775) [77.]**

Family APATANIIDAE

***APATANIA* KOLENATI, 1848**

Synonymy: *APATIDEA* MCLACHLAN, 1874; *APATELIA* WALLENGREN, 1886

***auricula* (Forsslund, 1930) [78.]**

[*fimbriata* (Pictet, 1843)

Misidentification of *A. auricula.*]

***muliebris* McLachlan, 1866 [79.]**

***wallengreni* McLachlan, 1871 [80.]**

Family LIMNEPHILIDAE

Subfamily DRUSINAE

***DRUSUS* STEPHENS, 1837**

***annulatus* (Stephens, 1837) [81.]**

***ECCLISOPTERYX* KOLENATI, 1848**

***dalecarlica* Kolenati, 1848 [82.]**

[*guttulata* (Pictet, 1834)

Misidentification of *E. dalecarlica.*]

Subfamily LIMNEPHILINAE

Tribe Chaetopterygini

***CHAETOPTERYX* STEPHENS, 1836**

***villosa* (Fabricius, 1798) [83.]**

Tribe Limnephilini

***ANABOLIA* STEPHENS, 1837**

***brevipennis* (Curtis, 1834) [84.]**

Synonymy: *Phacopteryx brevipennis*.

***nervosa* (Curtis, 1834) [85.]**

***GLYPHOTAELIUS* STEPHENS, 1837**

***pellucidus* (Retzius, 1783) [86.]**

***GRAMMOTAULIUS* KOLENATI, 1848**

***nigropunctatus* (Retzius, 1783) [87.]**

Synonymy: *Grammotaulius atomarius* (Fabricius, 1793).

***LIMNEPHILUS* LEACH, 1815**

***affinis* Curtis, 1834 [88.]**

***auricula* Curtis, 1834 [89.]**

***binotatus* Curtis, 1834 [90.]**

Synonymy: *Limnephilus xanthodes* McLachlan, 1875.

***centralis* Curtis, 1834 [91.]**

***coenosus* Curtis, 1834 [92.]**

Synonymy: *Asynarchus coenosus*.

***decipiens* (Kolenati, 1848) [93.]**

***elegans* Curtis, 1834 [94.]**

***flavicornis* (Fabricius, 1787) [95.]**

***fuscinervis* (Zetterstedt, 1840) [96.]**

***griseus* (Linnaeus, 1758) [97.]**

***hirsutus* (Pictet, 1834) [98.]**

***ignavus* McLachlan, 1865 [99.]**

***incisus* Curtis, 1834 [100.]**

Synonymy: *Colpotaulius incisus*.

***lunatus* Curtis, 1834 [101.]**

***luridus* Curtis, 1834 [102.]**

***marmoratus* Curtis, 1834 [103.]**

***nigriceps* (Zetterstedt, 1840) [104.]**

***pati* O'Connor, 1980 [105.]**

***rhombicus* (Linnaeus, 1758) [106.]**

***sparsus* Curtis, 1834 [107.]**

***stigma* Curtis, 1834 [108.]**

***tauricus* Schmid, 1964 [109.]**

***vittatus* (Fabricius, 1798) [110.]**

Tribe Stenophylacini

***HALESUS* STEPHENS, 1836**

***digitatus* (Schrank, 1781) [111.]**

***radiatus* (Curtis, 1834) [112.]**

***HYDATOPHYLAX* WALLENGREN, 1891**

***infumatus* (McLachlan, 1865) [113.]**

***MESOPHYLAX* MCLACHLAN, 1882**

***impunctatus* McLachlan, 1884 [114.]**

subspecies *zetlandicus* McLachlan, 1884

***MICROPTERNA* STEIN, 1874**

***lateralis* (Stephens, 1837) [115.]**

***sequax* McLachlan, 1875 [116.]**

***POTAMOPHYLAX* WALLENGREN, 1891**

***cingulatus* (Stephens, 1837) [117.]**

Past misidentifications as *Stenophylax latipennis* (Curtis, 1834).

***latipennis* (Curtis, 1834) [118.]**

Synonymy: *Stenophylax stellatus* (Curtis, 1834).

***STENOPHYLAX* KOLENATI, 1848**

***permistus* McLachlan, 1895 [119.]**

Superfamily SERICOSTOMATOIDEA
Family SERICOSTOMATIDAE
***SERICOSTOMA* LATREILLE, 1825**
***personatum* (Kirby and Spence, 1826) [120.]**
Family BERAEIDAE
***BERAEA* STEPHENS, 1833**
***maurus* (Curtis, 1834) [121.]**
***pullata* (Curtis, 1834) [122.]**
***BERAEODES* EATON, 1867**
***minutus* (Linnaeus, 1761) [123.]**
Superfamily LEPTOCEROIDEA
Family ODONTOCERIDAE
***ODONTOCERUM* LEACH, 1815**
***albicorne* (Scopoli, 1763) [124.]**
Family MOLANNIDAE
***MOLANNA* CURTIS, 1834**
***albicans* (Zetterstedt, 1840) [125.]**
Synonymy: *Molanna palpata* McLachlan, 1877.
Family LEPTOCERIDAE
***ADICELLA* McLACHLAN, 1877**
***reducta* (McLachlan, 1865) [126.]**
***ATHRIPSODES* BILLBERG, 1820**
***albifrons* (Linnaeus, 1758) [127.]**
Synonymy: *Leptocerus interjectus* McLachlan, 1881; *Leptocerus albifrons.*
***aterrimus* (Stephens, 1836) [128.]**
Synonymy: *Leptocerus aterrimus*.
***bilineatus* (Linnaeus, 1758) [129.]**
Synonymy: *Leptocerus bilineatus.*
***cinereus* (Curtis, 1834) [130.]**
Synonymy: *Leptocerus cinereus.*
***commutatus* (Rostock, 1874) [131.]**
Synonymy: *Leptocerus commutatus*.
***CERACLEA* STEPHENS, 1829**
***albimacula* (Rambur, 1842) [132.]**
Synonymy: *Leptocerus albo-guttatus* Hagen, 1860; *Ceraclea alboguttata*.
***annulicornis* (Stephens, 1836) [133.]**
Synonymy: *Leptocerus annulicornis*; *Athripsodes annulicornis.*
***dissimilis* (Stephens, 1836) [134.]**
Synonymy: *Leptocerus dissimilis*; *Athripsodes dissimilis.*
***fulva* (Rambur, 1842) [135.]**

Synonymy: *Leptocerus fulvus*; *Athripsodes fulva*.

***nigronervosa* (Retzius, 1783) [136.]**

Synonymy: *Ceraclea nervosa* (Fourcroy, 1785); *Leptocerus nigro-nervosus*; *Athripsodes nigronervosa*.

***senilis* (Burmeister, 1839) [137.]**

Synonymy: *Leptocerus senilis*; *Athripsodes senilis.*

***EROTESIS* MCLACHLAN, 1877**

***baltica* McLachlan, 1877 [138.]**

***LEPTOCERUS* LEACH, 1815**

***tineiformis* Curtis, 1834 [139.]**

***MYSTACIDES* LATREILLE, 1825**

***azurea* (Linnaeus, 1761) [140.]**

***longicornis* (Linnaeus, 1758) [141.]**

***OECETIS* MCLACHLAN, 1877**

***furva* (Rambur, 1842) [142.]**

***lacustris* (Pictet, 1834) [143.]**

***notata* (Rambur, 1842) [144.]**

***ochracea* (Curtis, 1825) [145.]**

***testacea* (Curtis, 1834) [146.]**

***SETODES* RAMBUR, 1842**

***argentipunctellus* McLachlan, 1877 [147.]**

***TRIAENODES* MCLACHLAN, 1865**

***bicolor* (Curtis, 1834) [148.]**

***YLODES* MILNE, 1934**

[*conspersus* (Rambur, 1842)
Misidentification]

***reuteri* (McLachlan, 1880) [149.]**

Addendum 2021

Since the publication of *A catalogue and atlas of the caddisflies (Trichoptera) of Ireland*), great progress has been made in mapping the distribution of the Irish caddisflies including the addition of seven species to the island's fauna. These are *Hydroptila lotensis* Mosely, 1930, *Hydroptila vectis* Curtis, 1834, *Oxyethira mirabilis* Morton, 1904, *Hydropsyche fulvipes* (Curtis, 1834), *Hagenella clathrata* (Kolenati, 1848), *Trichostegia minor* (Curtis, 1834), *Limnephilus borealis* (Zetterstedt, 1840). Further information will be found in O'Connor, J. P. (2020) *A National Grid Atlas of the Irish Caddisflies (Trichoptera)*. Occasional Electronic Publication Number 1. Irish Biogeographical Society, Dublin. 194pp. It can be downloaded from the IBS website <http://www.irishbiogeographicalsociety.com/pdf/IBSNationalgridatlasIrishcaddisfliestrichoptera.pdf>

The Catalogue

In the Catalogue, there are several sections under each species. General information is provided along with points of interest in the introductory part. Unless otherwise stated, the text is based on the author's personal observations along with information contained in the keys mentioned in the section on the identification of Irish Trichoptera. The known Irish and European distributions are shown. This is followed by the adult flight period, based on collected material. A third section lists the counties where the species has been taken. Irish people are very committed to these county boundaries and proud of the county of their birth. Altogether, there are 32 separate counties (Fig. 13). The number of recorded 10km squares is also noted.

A fourth section lists the published Irish records for each species. These are arranged chronologically. Where-ever possible, evident misidentifications or errors are noted. Ian Wallace has been of great assistance in adjudicating on larval records.

The final section details where voucher specimens are known to be held and gives unpublished data. These are ordered alphabetically according to county. Whether identifications have been confirmed or not is noted.

Dealing with the work of earlier workers has been relatively straightforward; they mainly studied adults and were frequently enthusiastic about the group, interested in new records and retained voucher specimens. However, with the advent of the excellent larval keys published by the Freshwater Biological Society for the British Isles, Trichoptera began to be routinely identified in limnological and other environmental studies including water quality work. Indeed water quality in Irish rivers has been assessed, by the Environmental Protection Agency (EPA) (then An Foras Forbartha) since 1971, primarily on the basis of macroinvertebrate communities in riffle areas, i.e. the Quality Rating System (Q-value) (e.g. Flanagan and Toner, 1972). In the universities and regional technical colleges, inexperienced students are often given the keys or partial photocopies and expected to produce lists from timed kick or surber samples sometimes taken at inappropriate times of year when earlier instars predominate. Over many years, the author examined large numbers of larvae sent to him in the Museum by numerous students for identification or confirmation. The level of misdeterminations varied between 10% and 60%. Surprisingly, very distinctive larvae were often misidentified. In one instance, the larvae belonging to a single species were identified as four separate species.

In 2000, with the passing of the EU Water Framework Directive, interest in the group intensified. It requires governments to take a new holistic approach to managing their waters and applies to rivers, lakes, groundwater, estuaries and coastal waters. Emphasis is on ecological quality and ecological status is derived from measurements of biological, hydro-morphological and physio-chemical elements. The measurement of the biological elements includes aquatic flora, benthic invertebrates and fish. As a result, large amounts of public money have been made available by the Irish Government, through agencies such the EPA and Marine Institute, to study the

macroinvertebrates including the EPT (Ephemeroptera, Plecoptera and Trichoptera). This work has provided a funding bonanza for *inter alia* universities, consultancy firms and other non-governmental organizations. Emphasis in these studies has been on the larvae with little heed paid to pupae or adults which would help to confirm identifications. Some excellent research has resulted with many useful caddis records.

FIGURE 13. The counties of Ireland.

However, some other research reports and scientific publications are highly frustrating to use as information sources. Taxa may be only identified to family or genus level. In other instances, large numbers of water-bodies such lakes or rivers have been sampled and then only a single combined list is provided of all the recorded species making it impossible to ascertain where a particular species was actually found. For example, in one paper recently published, 25 species are reported from 12 upland lakes. The lakes are listed but not where each species was actually found. A simple table could have provided this information. The scientific status of such work is very questionable as the results can never be replicated. In particular, they are useless in advancing our knowledge of Irish distributions. The compilation of long lists of macroinvertebrates with associated statistical analyses seem to be the sole purpose of many papers without the authors showing any interest in the actual insects, their ecology or their Irish status. This attitude frequently results in evident misdeterminations and false additions to the Irish fauna. In addition, voucher specimens are seldom retained or made accessible for checking if requested.

European distributions

European distribution maps are given for each species. These are based on those in Fauna Europaea (Malicky, 2014) but unlike that work, political boundaries are not shown and very small countries such as Luxembourg have been ignored. The Fauna Europaea maps were last updated on 27 January 2011 so some additions have probably been made since then. Many of the Irish species have distributions outside Europe. No attempt is made to include these in this publication. However the following indicative examples will be of interest: *Hydropsyche contubernalis* – northern and Central Europe, Asia Minor, Iran, and large parts of Central Asia and Siberia eastward to Jakutia and Mongolia (Malicky, 2008). *Oxyethira falcata*: outside Europe – Azores, Morocco, Algeria, Israel, Pakistan, Afghanistan, Tibet, throughout India (Kelley, 1984). *Ecnomus tenellus* occurs in four biogeographical regions (*viz.* East and West Palaearctic, Afrotropical and Oriental) and is a common species in Japan while outside Europe, *Ceraclea albimacula* is found in North China, Japan and Korea. By contrast, *C. nigronervosa* has been reported from Europe, Korea, northern China, Japan and north-western America (Tanida, Nishino and Uenishi, 1999).

Wiberg-Larsen (2008), reviewing the overall distributional patterns of European Trichoptera, showed that the fauna of Great Britain and The Netherlands are rather similar and stated that England was connected with the European Continent until about 8000-7000 calendar years BP. Ireland was linked to England until about 12,000-8000 calendar years BP and thus, it was before that time also a part of the continent. However, being separated from the continent for a longer time than England, Ireland generally has a somewhat poorer fauna – including Trichoptera – than England. He does not attempt to explain the presence of *Tinodes maculicornis*, *Apatania auricula* and *Limnephilus fuscinervis* in Ireland and their absence from Britain.

The countries of Europe are shown (Figs 14-15).

FIGURE 14. The countries of Europe.

FIGURE 15. Detail showing the smaller countries of Europe.

Irish distributions

The boundary between Northern Ireland and the Republic of Ireland is indicated on the Irish distribution maps. In some instances, the 10km squares straddle the border although the species may have been taken on only one side. Four figure Irish grid references are given for each record. The advantage of the Irish Grid is that it provides

one system of reference for the whole country correct for any scale of map (Figs 16-17).

FIGURE 16. A recording card prepared by the Ulster Museum and showing the Irish grid squares. Some of the indicative letters have been moved so as not to obscure some geographical features.

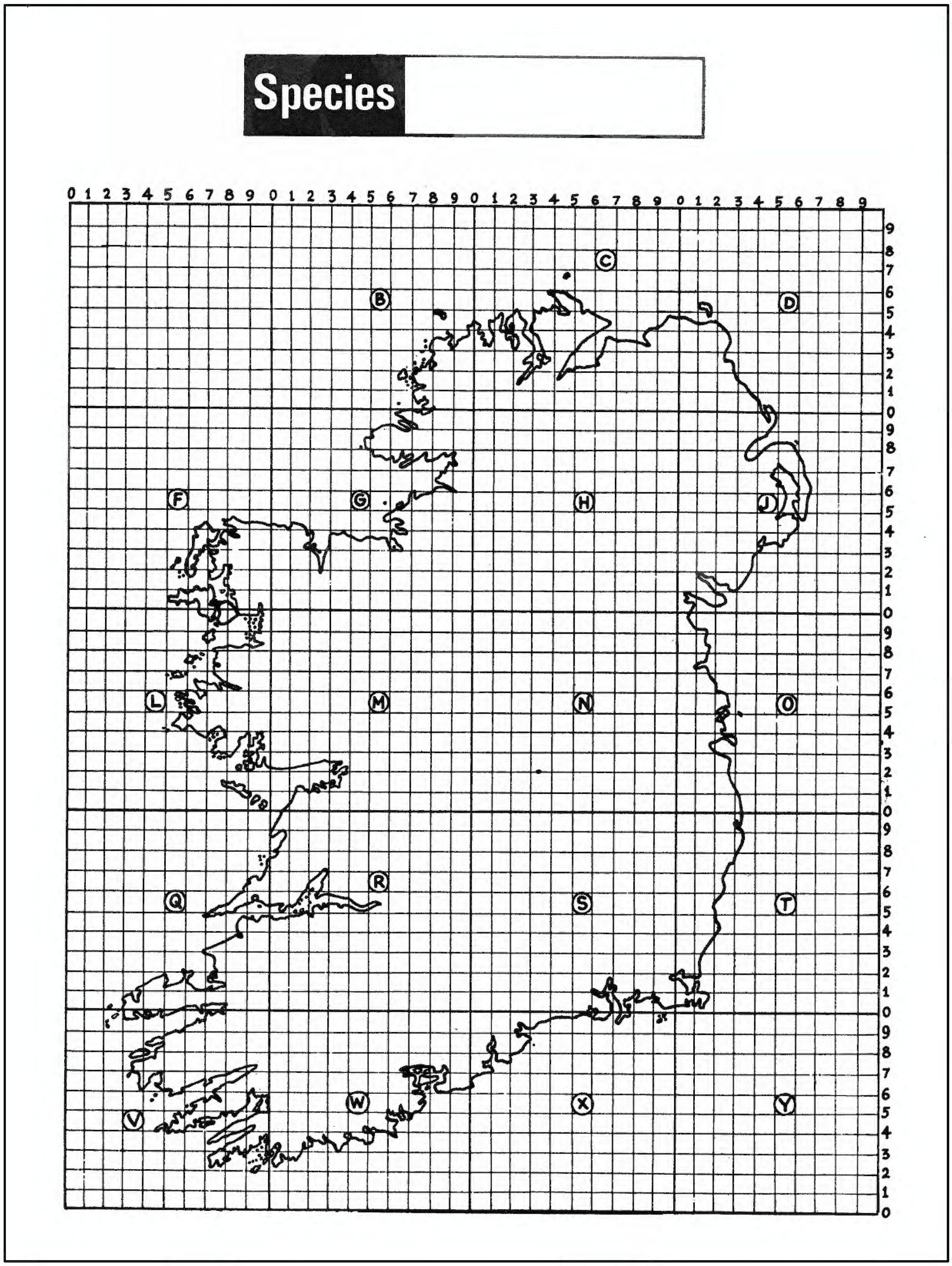
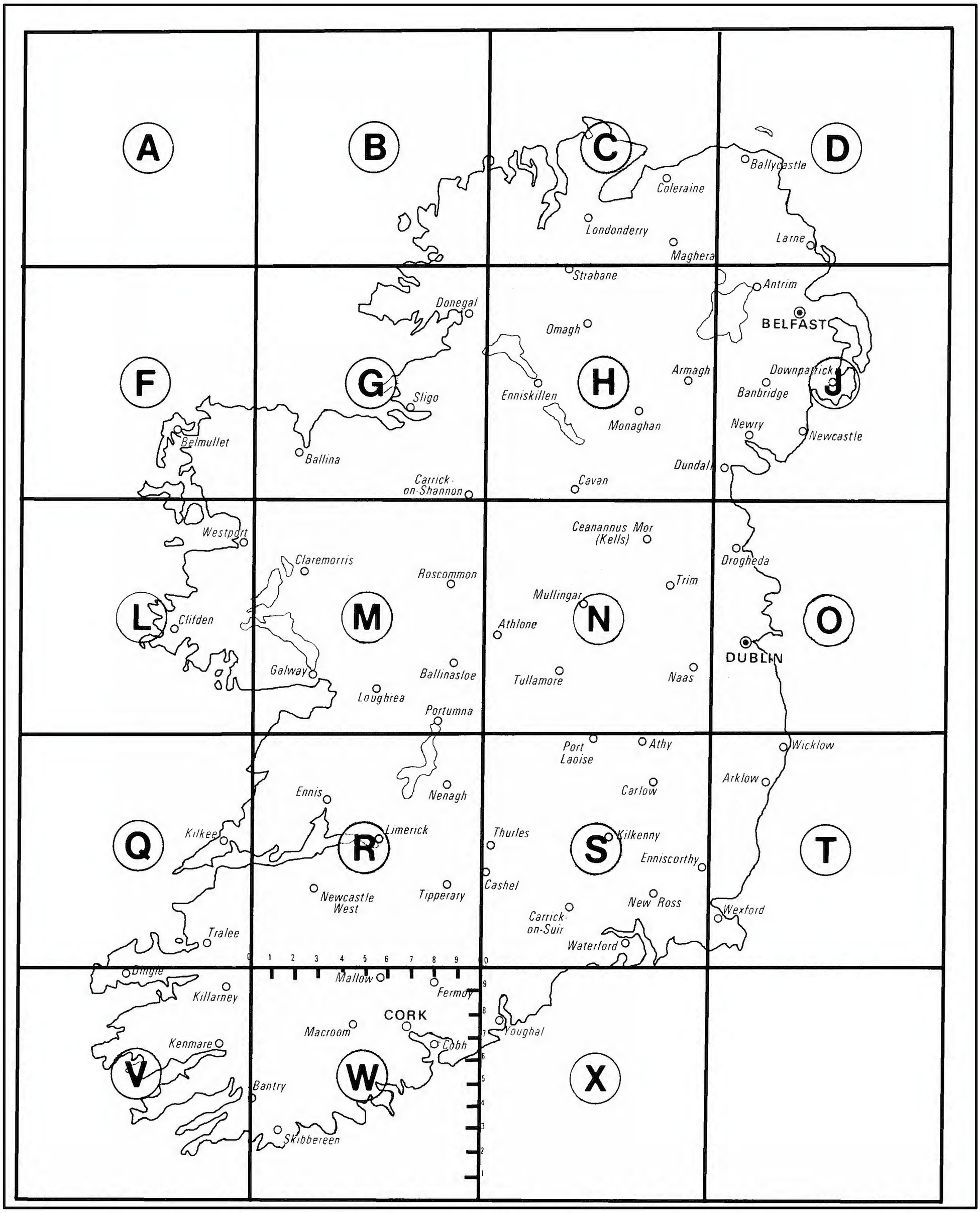


FIGURE 17. The Irish grid.



In compiling the grid references, the following websites have been of great use:- Irish grid references by Marcus Geoghegan (2008) <http://www.gridreference.ie/>. This provides grid references by clicking on Google maps; the latitude and longitude of a point by iTouchMap.com <http://itouchmap.com/latlong.html.>; geograph <http://www.geograph. org.uk/browse.php?gridref.>. In addition, grid references were checked on the maps of the Discovery Series of the Ordnance Survey of Ireland and the Discoverer Series of the Ordnance Survey of Northern Ireland (1:50,000). There

are 1019 10km grid squares in Ireland of which 187 lie wholly or partly within Northern Ireland (Tyner, 2007). The four figure grid references have been plotted on latitude/longitude distribution maps using a programme from Alan Morton of DMAP. They may be also viewed as Irish National Grid or latitude/longitude (World Geodetic System 84) maps at <https://maps.biodiversityireland.ie/Dataset/250>

Abbreviations and symbols used in the text

AEE – A. E. Eaton; **AFF** – An Foras Forbartha (now the Environmental Protection Agency); **AKA** – also known as; **ANS** – Á. Ní Shúilleabháin; **AWS** – A. W. Stelfox; **BC** – B. Connolly; **BMAG** – Bolton Museum and Art Gallery; **BMNH** – British Museum of Natural History (now The Natural History Museum, London); **BMOH** – B. M. O'Hanrahan; **BPB** – B. P. Beirne; **BW** – B. Wallace; **CC** – C. Carlin; **CD** – C. Dowling; **CGB** – C. G. Barrett; **CJM** – C. J. Morley; **CM/OSF** – C. M. Flint & O. S. Flint; **COK** – C. O'Keeffe; **Coll.** – Collection; **conf.** – identification confirmed; **CR** – C. Ronayne; **CTHM** – Carlisle Tullie House Museum; **DAM** – D. A. Murray; **DCFC** – D. C. F. Cotton; **DD** – D. Duggan; **DEK** – D. E. Kimmins; **det.** – determined; **DJOS** – D. J. O'Sullivan; **DMG** – D. McGrath; **DOK** – D. O'Keeffe; **DWHF** – D. W. H. Ffennell; **EFB** – E. F. Bullock; **EGH** – E. G. Hancock; **EH** – E. Hannigan; **EJW** – E. J. Wise; **FBA** – Freshwater Biological Association; **FCJF** – F. C. J. Fischer; **GAC** – G. A. Collins; **GHC** – G. H. Carpenter; **HAD** – H. A. Dauod; **HM** – H. Mendl; **HMAG** – Hunterian Museum and Art Galley; **HOC** – H. O'Connor; **IDW** – I. D. Wallace; **IET** – insect emergence trap; **IETS** – insect emergence traps; **IFT** – Inland Fisheries Trust (now Inland Fisheries Ireland); **IM** – Ipswich Museum; **JAG** – J. A. Good; **JC** – J. Carey; **JDB** – J. D. Bradley; **JEM** – J. E. Marshall; **JJFXK** – J. J. F. X. King; **JMCH** – J. M. C. Holmes; **JML** – J. M. Lynch; **JNH** – J. N. Halbert; **JPOC** – J. P. O'Connor; **JR** – J. Reynolds; **JRAG** – J. R. A. Gray; **JRH** – J. R. Harris; **JS** – J. Shackleton; **JW** – J. White; **KFW** – K. F. Whelan; **KGMB** – K. G. M. Bond; **KJM** – K. J. Morton; **KP** – K. Partridge; **L.** – Lough; **LSG** – L. S. Garrad; **LT** – Heath portable light-trap; **LTS** – Heath portable light-traps; **LW** – L. Walsh; **MANM** – Manchester Museum; **MAOC** – M. A. O'Connor; **MB** – M. Boston; **MCDS** – M. C. D. Speight; **MDCW** – M. de Courcy Williams; **MEM** – M. E. Mosley; **MFOG** – M. F. O'Grady; **MG** – M. Gammell; **MJC** – M. J. Costello; **MK** – M. Kennedy; **MM** – M. Murphy; **MN** – M. Nolan; **MT** – Malaise trap; **MTS** – Malaise traps; **MVLT** – mercury vapour light-trap; **MVLTS** – mercury vapour light-traps; **NK** – N. Kirby; **NMI** – National Museum of Ireland; **NML** – National Museums Liverpool; **NMS** – National Museums of Scotland; **NMV** – National Museum of Victoria; **NS** – N. Sangpradub; **NUI** – National University of Ireland; **PA** – P. Ashe; **PB** – P. Buckley; **PCB** – P. C. Barnard; **pers. comm.** – personal communication; **PG** – P. Gargan; **PHW** – P. H. Ward; **PS** – P. Sweeney; **PSG** - P. S. Giller; **R.** – River; **Rev.** – Reverend; **RLT** – Robinson light-trap; **RM** – R. Merritt; **RMCL** – R. McLachlan; **RS** – R. Shackleton; **SB** – S. Brisk; **SF** – S. Fahy; **SINMNH**

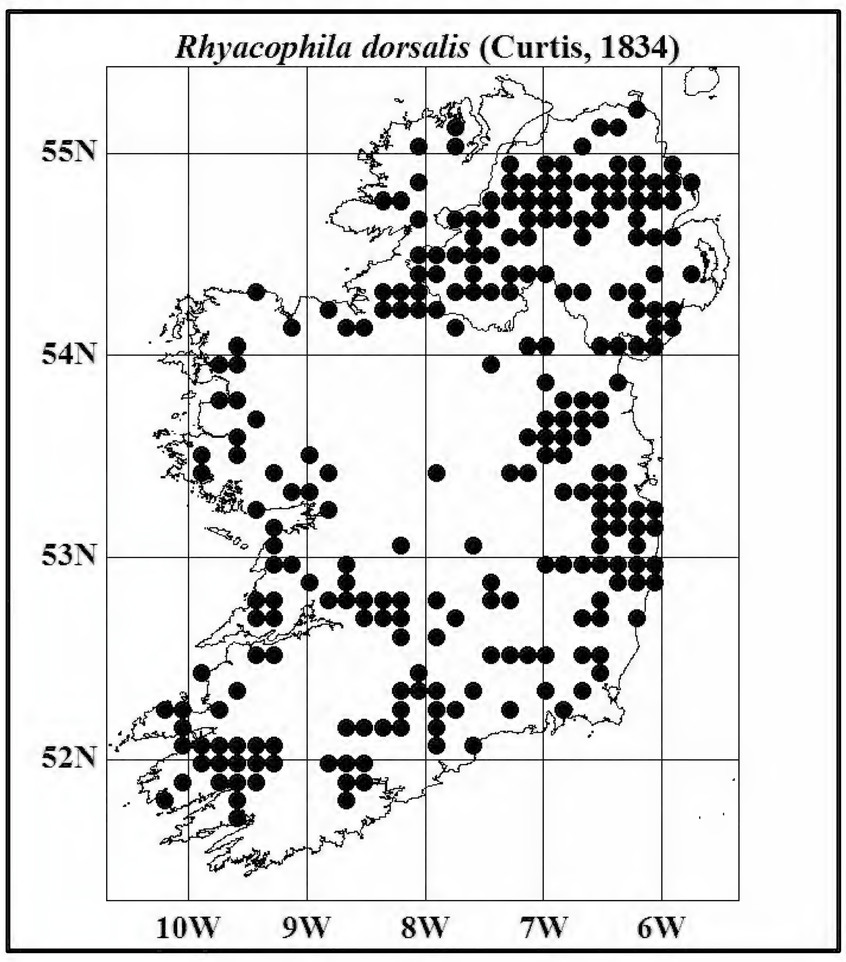
– Smithsonian Institution National Museum of Natural History, Washington; **SV** – S. Varian; **SW** – S. Wistow; **TC** – T. Champ; **TMM** – Tolson Memorial Museum, Huddersfield; **TMN** – T. McNally; **TVC** – T. V. Campbell; **u/s** – upstream; **UCD** – University College Dublin; **UVLT** – ultra violet light-trap; **VA** – V. Armstrong. ♂ – male; ♂♂ – males; ♀ – female; ♀♀ – females; [ ] square brackets contain corrections or additional information.

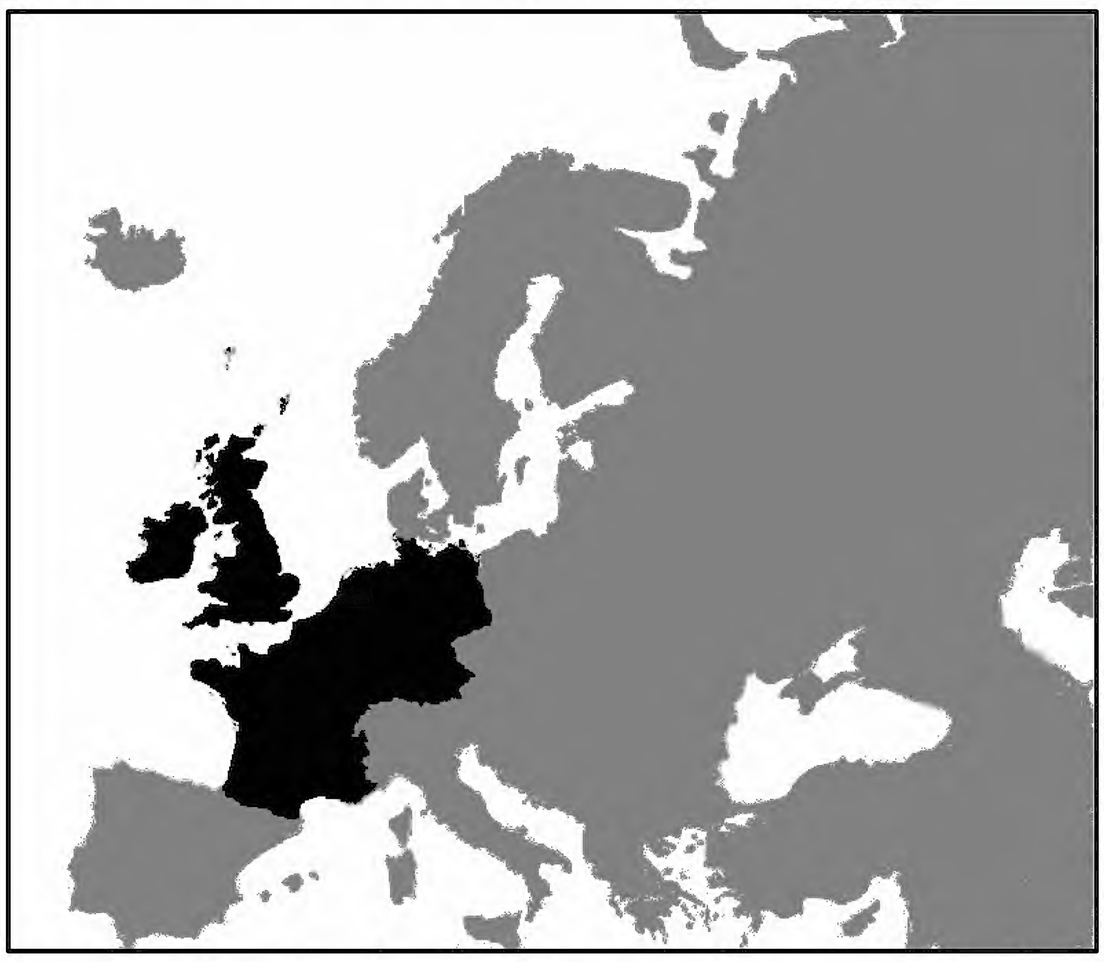
The species

RHYACOPHILIDAE

1. *Rhyacophila dorsalis* (Curtis, 1834)

FIGURES 18-20. Known Irish and European distributions of *Rhyacophila dorsalis*.





Rhyacophila dorsalis is widely distributed and is one of the commonest Irish caddisflies. The free living larvae occur in flowing waters ranging from streams to rivers but require a stony substratum. They are active predators, consuming other Trichoptera, mayflies, chironomids, simuliids, gammarids and even fish eggs (Waringer and Graf, 2011). The slim head capsule seems to be ideal for searching for prey in crevices and interstices. In the Glenfinnish River, County Cork, two clear "cohorts" of the first of the five larval instars were found. One occurred in early

spring, the other in late summer and early autumn (Sangpradub, Giller and O'Connor, 1999). The larvae are among the prey of the stoneflies *Dinocras cephalotes* (Curtis) and *Perla bipunctata* (Pictet) (Lucy, Costello and Giller, 1990). The adults have a long flight period. Malicky (2005) lists seven definite subspecies but only ssp. *dorsalis* occurs in Ireland. This subspecies is also known from Belgium, Britain, Faroe Islands, France, Germany, Luxembourg, the Channel Islands and the Netherlands (Fig. 19). The European distribution of *R. dorsalis sensu lato* is also shown (Fig. 20).
Flight period: April–October (14 April–20 October).
Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Laois, Leitrim, Limerick, Louth, Mayo, Meath, Monaghan, Offaly, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (30/32). The species is known from 251 10km squares (251/1019).

Published records

McLachlan, 1885 (**ANTRIM:** Colin Glen (J2771)). *King, 1888a* (**ANTRIM:** Colin Glen (J2771). **DUBLIN:** Lucan Demesne (O0235) [R. Liffey]. **GALWAY:** L. Corrib (Galway) (M2829); Ma'am Burn (L9653). **KERRY:** Cloghereen (V9787), Denough [Deenagh] (V9792) and Flesk (V9689) Rivers; Horses' Glen (V9981); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084). **TYRONE:** Altadiawan (Altadaven) (H5949). **WESTMEATH:** Ballykeeron [Ballykeeran] (N0744). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *McLachlan, 1903* (**CORK:** Blarney (W6074)). *King and Halbert, 1910* (**ANTRIM:** Colin Glen (J2771). **CORK:** Blarney (W6074). **DONEGAL:** Ardara (G7390) [Owntocker R.]; Clonkillybeg [L.] (C1219); Glenbeagh (B9918) [Owenbeagh R.]; Lennan Bridge (C1621) [Leannan R.]; Loughs Keel (C1524) and Reelan (C1327); etc. **DUBLIN:** Lucan demesne (O0235) [R. Liffey]. **GALWAY:** L. Corrib near Galway (M2829); Maam R. (L9653). **KERRY:** Cloghereen (V9787); Deenagh (V9792) and Flesk (V9689) Rivers; Horse's Glen (V9981); Torc Cascade (V9684). **LOUTH:** Omeath (J1415). **MAYO:** Carrowbeg R. (M0084). **TYRONE:** Altadiawan (Altadaven) (H5949). **WATERFORD:** Glenshelane (S1203). **WESTMEATH:** Ballykeeran (N0744). **WEXFORD:** Edenvale (T0427) [R. Sow]. **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Cashel Bay (L7942); Inverin (M0822)). *Beirne, 1939* (**CORK:** Ballyhooly (W7298) [R. Blackwater]; Castletownroche (R6802)). *Frost, 1939* (**KILDARE:** Straffan (N9229). **WICKLOW:** Ballysmuttan [R. Liffey] (O0514)). *Frost, 1942* (**KILDARE:** Straffan (N9229) [R. Liffey]. **WICKLOW:** Ballysmuttan [R. Liffey] (O0514)). *Beirne and Harris, 1946* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Toner and O'Connell, 1971* (**CORK:** Blarney (R. Martin) (W6176); Fermoy (R. Blackwater) (W8098); Mallow (R. Blackwater) (W5598); Mitchelstown (R. Funcheon) (R8113); Rathduff (R. Martin) (W5984)). **KERRY:** Rathmore (R.

Blackwater) (W1693)). *McCarthy, 1972* (**DONEGAL:** Glen R. (Owenea R.) (G8893)). *Partridge and Foy, 1972* (**MAYO:** L. Feeagh (L9598), (L9698), (L9699)). *Fahy, 1972a* (**ANTRIM:** (D0901) [corrected to Braid R. from D0902]. **DONEGAL:** (B9902), (G7787), (G8192), (G9089), (G9781). **DOWN:** (J1147) [near Banbridge] [corrected from J1247]. **FERMANAGH:** (H3439) [near Maguiresbridge]. **GALWAY:** (M3535). **KERRY:** (V9791) [Killarney]. **KILKENNY:** (S4843) [near Thomastown], (S4144) [near Callan]. **LAOIS:** (N2902). **LIMERICK:** (R1040), (R8253). **LOUTH:** (N9882) [near Collon], (J0411); (O0695). **MAYO:** (F9505), (G0837), (L9665), (M0968) [near Toormakeady]. **MEATH:** (N9777), (N8684) [near Siddan]. **SLIGO:** (G5325), (G5128). **TIPPERARY:** (M8902), (R9618), (R8114), (R8161), (R9930), (S2423), (S1213). **WATERFORD:** (S1306). **WEXFORD:** (T1759) [corrected from T1859]. **WICKLOW:** (T1898), (T1899)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Fahy, 1972c* (**MAYO:** Altahoney R. (F9605)). *Fahy, 1973* (**WICKLOW:** Glenmalur stream (T0396)). *Bracken and Murray, 1973* (**CORK:** L. Avaul (V9153)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1819), (O1919), (O2117), (O2217) [An * in this paper indicates adults taken and determined by JPOC]). *McCarthy, 1977* (**MEATH:** Trimblestown R. (N7262)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**WICKLOW:** L. Dan (O1504)). *O'Connor and Bracken, 1980b* (**MEATH**: R. Tolka (O0241), bridge upstream of Dunboyne tributary, (O0341), Clonee Bridge). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480), (V7281), (V7182), (V7186), (V7192)). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor, 1983* (**LAOIS)**. *Dauod, Bolger and Bracken, 1986* (**WICKLOW:** Roundwood Reservoir (O2002)). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1325), (O1326), (O1327), (O1427)). *Bracken and Dauod, 1990* (**WICKLOW:** Roundwood Reservoir (O2002)). *Lucy, Costello and Giller, 1990* (**CORK:** Shournagh R. (W5975). **KERRY:** Cottoners R. (V8379)). *Twomey and Giller, 1991* (**CORK:** tributary of R. Araglin (R8702)). *Bracken, Norton and Philips, 1991* (**TIPPERARY:** Kilmastulla R.). *Giller, Sangpradub and Twomey, 1991* (**CORK:** R. Araglin, Glenfinish Bridge (R8702)). *Kelly-Quinn, 1991* (**WICKLOW:** Glenealo R. (T1196)). *O'Grady and King, 1992* (**MAYO:** Bunree R. (G3118), (G3120)). *Giller and Twomey, 1993* (**CORK:** Glenfinnish R. (R8702); R. Awbeg (R6804)). *Sangpradub and Giller, 1994* (**CORK:** Glenfinnish R.). *Carter and Wood, 1995* (**ANTRIM:** Clogh R. [indicative D1616]). *Tierney, Kelly-Quinn and Bracken, 1998* (**WICKLOW:** no sites given for the species). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Wright et al., 2000* (**NORTHERN IRELAND:** 60 out of 70 sampled sites). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706) and near Murroogh (M1508)). *Kelly et al., 2003* (**TYRONE:** R. Lissan (H8280)). *O'Connor*

and Wise, 2004 (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune, the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 179 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Ryder et al., 2011* (**MAYO:** Burrishoole (F9509); Owengarve (F9101)). *Gammell, 2011* (**WEXFORD:** R. Sow, Edenvale (T0427)). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); Doolough (V9585); L. Leane (V9686); Muckross Lake (V9485); R. Behy (V6589); R. Flesk (V9789); R. Inny (V5572)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Cashel Burn (D1706); Coopers Water (J2175); Crew Burn (J1370); Doagh R. (J2693); Doagh R. tributary (J2593); Douglas Burn (J2299); Dunnstown Burn (D0409); Glynn R. (J4099); Kellswater (J1698); Legnagooly Burn (D1312); R. Braid (D1003); R. Bush (D0729), (C9436); R. Clady (J1984), (C9603); R. Clogh (D0613); R. Crumlin (J1976); R. Dervock (D0233); R. Glenarm (D3114); R. Glenshesk (D1240); R. Larne (D3700); R. Main (J0889); Ross Burn (J1597); Six Mile Water (J3195), (J2890). **ARMAGH:** Forkhill R. (J0115); Kilnasaggart (R.) (J0615); R. Callan (H8539). **DERRY (LONDONDERRY):** Cam Burn (C8421); Miltown Burn (H8499); R. Aghadowey (C8722); R. Agivey (C7912); R. Ballinderry (H9279), (H7379); R. Douglas (H7796); R. Faughan (C4713); R. Inver (C5301); R. Mayoghill (C8819); R. Moyola (H9590); R. Owenbeg (C6809); R. Owenrigh (C6606); R. Roe (C7506). **DOWN:** Begny Hill Feeder (J2850); Cassy Water (J2314); R. Annacloy (J4448); R. Annalong (J3719); R. Kinnahalla (J2328); R. Shankys (J2225); R. Shimna (J3532); Spences R. (J3722); Upper Bann (J1345), (J2129). **FERMANAGH:** Cooneen Water (H4539); Foxhill Burn (H2752); Lisnabane Burn (H3744); R. Arney (H1737); R. Ballinamallard (H2853); R. Bannagh (H1665); R. Black (H0143); R. Boho (H1344); R. Colebrooke (H3744); R. Garvary (H0063); R. Glendurragh (H2265); R. Lack (H2566); R. Roogagh (G9451); R. Sillees (H1152), (H2341); R. Termon (H1165). **TYRONE:** Ballygawley R. (H6353); Ballynahatty Water (H4367); Dreenan Burn (H2184); Dunnyboe Burn (H4599); Fairywater (H3976); Fury R. (H5551); Glashagh Burn (H6180); Gortin Water (H7879); Granagh Burn (H6072); Lissan Water (H8081); Oughtmame Burn (H6293); R. Blackwater (H7544), (H6253); R. Camowen (H4673); R. Cleen (H4748); R. Cloghfin (H5767); R. Coolaghty (H2567); R. Derg (H1980), (H3184); R. Glenelly (H5691); R. Owenkillew (H6885), (H4387), (H6184); R. Owenreagh (H3365), (H5882); R. Strule (H4186); Quiggery Water (H4467); Tullynadall Burn (H4490). *O'Driscoll et al., 2014* (**MAYO:** Glennamong R. (F9303); Srahrevagh R. (G0004)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *Feeley and Kelly-Quinn, 2014* (**WICKLOW:** Clohernagh Brook (O1090)). *Baars et al.*,

2014 (**IRELAND:** recorded in 1 of 12 upland peatland lakes, inlet stream nearby). *Anon., 2015a* (**CORK:** Glengarriff Nature Reserve (V9157). **DUBLIN:** Liffey Valley Park, Waterstown (O0835). **KERRY:** Killarney National Park (V9590). **WICKLOW:** Wicklow Mountains National Park (T1196)). *Woodward et al., 2015* (**CORK:** Glenfinish R. (R8702)).

Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), 5 adults 1885, CGB, conf. JPOC (BMNH); **Toomebridge** (H9990), adult (BMNH). **CARLOW: R. Barrow** (S7237), St Mullins, LTS 2♀♀ 22 July 2015, JPOC/MAOC, det. JPOC. **CAVAN: R. Annalee** (H6709), ♂♀ 1 September & 5♂♂2♀♀ 30 September 1972, ♀ 20 May 1974, (H5411), ♂ 3 October 1972, LT ♂♀ 27-28 September 1973, JPOC; **R. Barora** (N6893), 4♂♂ 31 August & ♂ 4 October 1972, LT 2♂♂♀ 1-2 August 1973, JPOC; **R. Laragh** (H5210), LT 3♂♂2♀♀ 2-3 August 1973, JPOC; **R. Owenmore** (H0626), ♂♀ 3 August 1973, JPOC; **R. Owennayle** (G9726), ♂ 3 August 1973, JPOC; **R. Swanlinbar** (Cladagh) (H1424), ♂♂ 3 August 1973, JPOC; **stream** (N4096), Bellananagh/Mount Nugent road, 2♂♂ 16 June 1973, JPOC; **stream** (N3996), south-east of Bellananagh, ♂♂ 16 June & ♂ 5 August 1973, JPOC; **stream** (N3996), ♂ 5 August 1973, JPOC; **stream/waterfall** (H1224), mountain south-west of Swanlibar, ♀ 3 August 1973, JPOC. **CARLOW: R. Slaney** (S9161), Clonegal, adult 31 August 1946, JRH; **St Mullins** (S7238), stream, 3 larvae & 2♂♂ pupae 5 July 2014, MAOC/JPOC, det. JPOC. **CLARE: Ardcloony R.** (R6770), larva & 4♂♂4♀♀ 3 September 1973, 2♂♂ 29 May 1974, JPOC; **Creegh R.** (Q9966), 4♂♂2♀♀ 29 August 1973, JPOC; **Doonbeg R.** (R1261) [Greygrove R.], ♀ 9 July 1973, JPOC; **north of Sixmilebridge** (R4767) [Rally R.], ♂ 6 August 1986, CM/OSF (SINMNH); **R. Annageeragh** (R0271), 3 larvae, ♂ pupa & ♂ 9 July 1973, JPOC; **R. Bleach** (R5695), 7♂♂41♀♀ 3-4 September 1973, JPOC; **R. Caher** (M1508), 2 larvae 19 July 1981, LT 4♀♀ 30-31 August 1973, JPOC (NMI); **R. Cloon** (R1758), ♂ 8 July 1973, JPOC; **R. Creegh** (Q9966), 4♂♂2♀♀ 29 August 1973, JPOC; **R. Cullenagh** (R1388), LT 20♀♀ 9-10 July 1973, JPOC; **R. Ennistymon** (R. Inagh) (R1288), LT ♂ 15 July 1981, JPOC; **R. Fergus** (R2688), below L. Inchiquin, 3♀♀ 1 September 1973, (R3480), ♂ 11 July 1973, (R2591), LT 7♂♂3♀♀ 10-11 July 1973, JPOC; **R. Shannon** (R6767), LT ♂♂♀♀ 12-13 July 1973, JPOC; **stream** (R1472), south-west of Tullaghaboy, ♂ 29 August 1973, JPOC; **stream** (R1472) entering L. Doo, ♂ 29 August 1973, JPOC; **stream** (R5367), west of Oatfield, larvae & ♂♂ 12 July 1973, JPOC; **stream** (R5695), entering R. Bleach, 2 larvae 13 July 1973, JPOC; **stream** (R5267), ♂ 12 July 1973, JPOC; **stream** (R5376), larva & 3♂♂ 12 July 1973, JPOC. **CORK: Douglas R.** (W7069), Cork City, MVLT ♂ 7-8 August 1991, KGMB, det. JPOC (NMI); **Inishannon** [R. Brandon] (W5257), ♂ 30 April 1985, KGMB; **R. Araglin** Catchment (R8702), larvae, NS & PSG; **R. Blackwater** (W5397), west of Mallow, ♂ 4 August 1986, CM/OSF (SINMNH); **R. Lee** (W5671), adults, MK; **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI). **DONEGAL: Ardara**

(G7390) [Owntocker R.], ♀ 28 July 1892, WFJ, conf. JPOC (NMI). **DUBLIN: Bohernabreena** (O0921), river, 2♂♂♀ 11 June 2015, JPOC/MAOC, det. JPOC; **Glencullen R.** (O1919), ♂ pupa & ♂ 27 September 1977, JPOC; **Owendoher R** (O1324), larva 27 September 1977, JPOC; **R. Dodder** (O0926), larvae & ♂ pupa 11 June 1971, (O1228), 6 larvae 11 June 1971, all JPOC; **R. Liffey** (O0335), Lucan, adult 22 August 1945, JRH, (O0635), weir at Wren's Nest, ♂♀ 12 August 2014, JPOC; **R. Tolka** (O0938), Blanchardstown Bridge, larva 7 July 1972, JPOC. **GALWAY: Ballinafad** (L7946), east side of An Abhainn Mhór ["Big river"], LT ♂ 3 October 2014, GM/CC, det. GM; **Cashel Bay** (L7942), Connemara, adult 6-16 September 1929, MEM (BMNH); **Connemara National Park** (L7157), at light 2♂♂♀ 17 September 1982, NK, det. JPOC (NMI), (L7455), Polladirk R., larvae 1991, SV, conf. JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 3 May 1984, PB, det. JPOC; **Galway** (M2927), adult 17 July 1926, MEM (BMNH); **Inverin** (M0822), adult 26 August-6 September 1929, MEM (BMNH); **Oughterard** (M1343), 3-9 August 1926, MEM (BMNH); **R. Clare** (M4243), 19 larvae 22 August 1972, 3 larvae & ♀ pupa 11 August 1971, (M4049), 8 larvae & ♂ pupa 22 August 1972, (M4136), turlough mor [R. Clare], 3 larvae 22 August 1972, (M4341), 5 larvae & ♂ pupa 28 August 1972, all AFF, det. JPOC. **KERRY: Dreenagh** (Q7132), Kerry Head, adult 14 September 1982, EGH, det. JRAG (BMAG) (per IDW); **Finnihy R.** (V9072), 4♂♂ 26 August 1973, JPOC; **Galway's Bridge** (V9180), ♀ 31 May 1995, JPOC; **Kilbrean Lake** (W0093), ♂ 7 September 1972, JPOC; **Killarney,** ♂ 27 June, ♂ 8 July, ♂ 16 July & ♂ 20 July, ♂ 5 August & ♀ 11 August 1887, [JJFXK], conf. JPOC (NMI); **L. Looscaunagh** (V8879), ♂ 4 August 1986, CM/OSF (SINMNH); **L. Slat** (Q6008) [corrected], Stadbally, adult 13 September 1982, EGH, det. JRAG (BMAG) (per IDW); **R. Annascaul** (Q5901), larva & 2♂♂ 28 August, ♀ 17 October 1973, JPOC; **R. Behy** (V6589), stream/waterfall, ♂ 17 October 1973, JPOC; **R. Blackwater** (V7972), Derrendarragh, 2♀♀ 4 August 1986, CM/OSF (SINMNH), (V7969), 2♂♂2♀♀ 26 August 1973, (V7970), ♂3♀♀ 4 July 1973, JPOC; **R. Clydagh** (W1683), near Knocknagowan, LT ♂♀ 17 May 1978, JPOC (NMI); **R. Cummeragh** (V5872), 3 larvae 6 July & ♀ 26 August 1973, (Q7811), LT ♂♀♀ 7-8 July 1973 (NMI), JPOC; **R. Curraheen** (Q7812), larva & 5♂♂ pupae 8 July 1973, JPOC; **R. Finglass** [Finglas] (V5163), Waterville, adult 19 September 1966, JRH; **R. Finnihy** (V9072), 4♂♂ 26 August 1973, JPOC; **R. Flesk**, adult 20 October 1946, JRH, (V9689), ♀ 25 June, ♂ 3 July (NMI) & 2♀♀ 14 October 1973, (V9789), ♂ 3 July 1973, (V9890), ♀ pupa June 1972, 2 larvae & 2♂♂♀ pupae September 1972, (W0387), ♂♀♀ 10 October 1972, (W0185), exiting L. Guitane, ♂2♀♀ 10 October 1972, all JPOC, (V9689), larva May 1972, EJW (NMI); **R. Gaddagh** (V8491), larva, prepupal larva & ♂♀♀ 24 August (NMI), ♂ 13 October 1973, JPOC; **R. Galey** (R0438), 2♀♀ 8 July 1973, (R0139), ♀♀ 8 July & LT ♂♂♀♀ 28-29 August 1973, JPOC; **R. Glenahoo** (Q5410), larva, ♂ pupa & ♀ 7 July & ♂♀ 28 August 1973, JPOC; **R. Glenbeigh** (V6690), ♂ 17 October 1973, JPOC; **R. Inny** (V5572), LT

♂♂♀♀ 5-6 July & ♂ 26 August 1973, (V5673), ♂ 26 August 1973, JPOC; **R. Laune** (V8991), ♂ pupa 25 August 1973, (V8892) 1 prepupal larva & 5♂♂3♀♀ pupae August 1972, JPOC; **R. Owenascaul** (Q5900), larva & ♂♂ 28 August, ♂♂ 17 October 1973, JPOC; **Roughty R.** (V9872), ♂♂ 19 October 1973, JPOC; **Roughty R. [Owbeg R.]** (V9873), Ardtully, 2♂♂ 19 October 1973, JPOC; **stream** (V8879), exiting L. Lauscaunagh, ♂♂ 11 October 1972, JPOC; **stream** (V6986), at Drom East, ♂♂♀ 27 August 1973, JPOC; **stream** (Q9022), south-east of Kilflynn, larvae, ♂ pupa & ♂♂ 7 August 1973, JPOC; **stream** (V6274), near Derriana Lake, adults 1-13 July 1979, JPOC (NMI); **stream** (Q9025), Kilflynn, 6 larvae, ♂ pupa & 3♂♂ 7 August 1973, JPOC; **stream** (V6986), near Caragh, 5♂♂♀ 27 August 1973, JPOC; **Torc Cascade** (V9684), 2 larvae & ♂ 28 May 1974, JPOC. **KILDARE: R. Barrow** (S6892), near Athy, 3 larvae 7 July 2013, PS; **R. Greese** (S7488), Kilkea, adult 21 June 1947, JRH. **KILKENNY: R. Nore** (S4472), larvae 16 August 2004, PS, (S4372), larvae 16 August 2004, PS, (S4470), Ballyragget, larvae 16 August 2004, PS, (S6337), Inistioge, ♂ 30 July 2015, JPOC/MAOC, det. JPOC. **LAOIS: Oweg (Ouveg) R.** (S4473), larvae 16 August 2004, PS; **R. Nore** (S4276), Tallyho Bridge, larvae 16 August 2004, PS. **LEITRIM: Bonet R.** (G8444), larvae 25 June 1991, (G8434), larvae 19 July 1989, (G8534), larvae 17 July 1989 & 24 June 1991, (G8433), larvae 17 July 1989, (G8231), larvae 18 July 1989 & 24 June 1991, (G8031), larvae 18 July 1989, (G7931), larvae 18 July 1989, (G8642), larvae 18 July 1989, (G8741), larvae 18 July 1989 & 25 June 1991, (G8740), larvae 18 July 1989, (G8738), larvae 18 July 1989, 26 March & 24 June 1991, (G8637), larvae 18 July 1989, DAG/JML, det. JML; **Glencar Waterfall** (G7543), ♂ 25 August 1992, JPOC; **Owenmore R.** (G9137), larvae 26 March & 24 June 1991, (G8839), larvae 18 July 1989, DAG/JML, det. JML. **LIMERICK: R. Shannon** (R6663), Castleconnell, LT 10♂♂8♀♀ 12-13 July 1973, JPOC. **LOUTH: Omeath** (J1415), ♂ September 1891, WFJ, conf. JPOC (NMI). **MAYO: Croagh Patrick** (L8981), Carrowmacloughlin, MVLT ♀ 3 August 1989, KGMB, det. JPOC (NMI). **MEATH: Kells Blackwater R.** (N8172), larva & ♂ pupa 8 July 1972, AFF, (N7377), ♂♀ 1 August 1986, JPOC; **R. Blackwater** (N8668), Navan, adult 23 May 1947, JRH, larvae 5 September 1988, DAG/JML, det. JML, (N7377), west of Kells, 9♂♂8♀♀ 1 August 1986, CM/OSF (SINMNH), ♀ 13 June 1976, JPOC, (N7476), near Kells, ♂♂ 13 June 1976, JPOC (NMI); **R. Boyne** (N8768), 7 larvae, 25 June 1971, AFF, det. JPOC, (N8660), Bective, 12 larvae 5 September 1988, (N8865), Kilcarn, 26 larvae 5 September 1988, (N8767), near Navan, larva 5 September 1988, (N8056), near Trim, 8 larvae 5 September 1988, (N8968), Blackcastle, 4 larvae 9 September 1988, (N8768), Mollies, ♂♂ 24 May 1988, MFOG, det. JPOC, larva 9 September 1988, (N9070), Dunmore Castle, 4 larvae 5 September 1988, MFOG, det. JPOC, (N8868), 3♂♂ 1 October 1992, JPOC, (N8057), larvae 5 September 1988, (N8659), larvae 5 September 1988, (N8865), larvae 5 September 1988, (N8768), larvae 5 September 1988, (N9070), larvae 5 September 1988, (N7149), larvae June 1989 & July 1991, (N7352), larvae

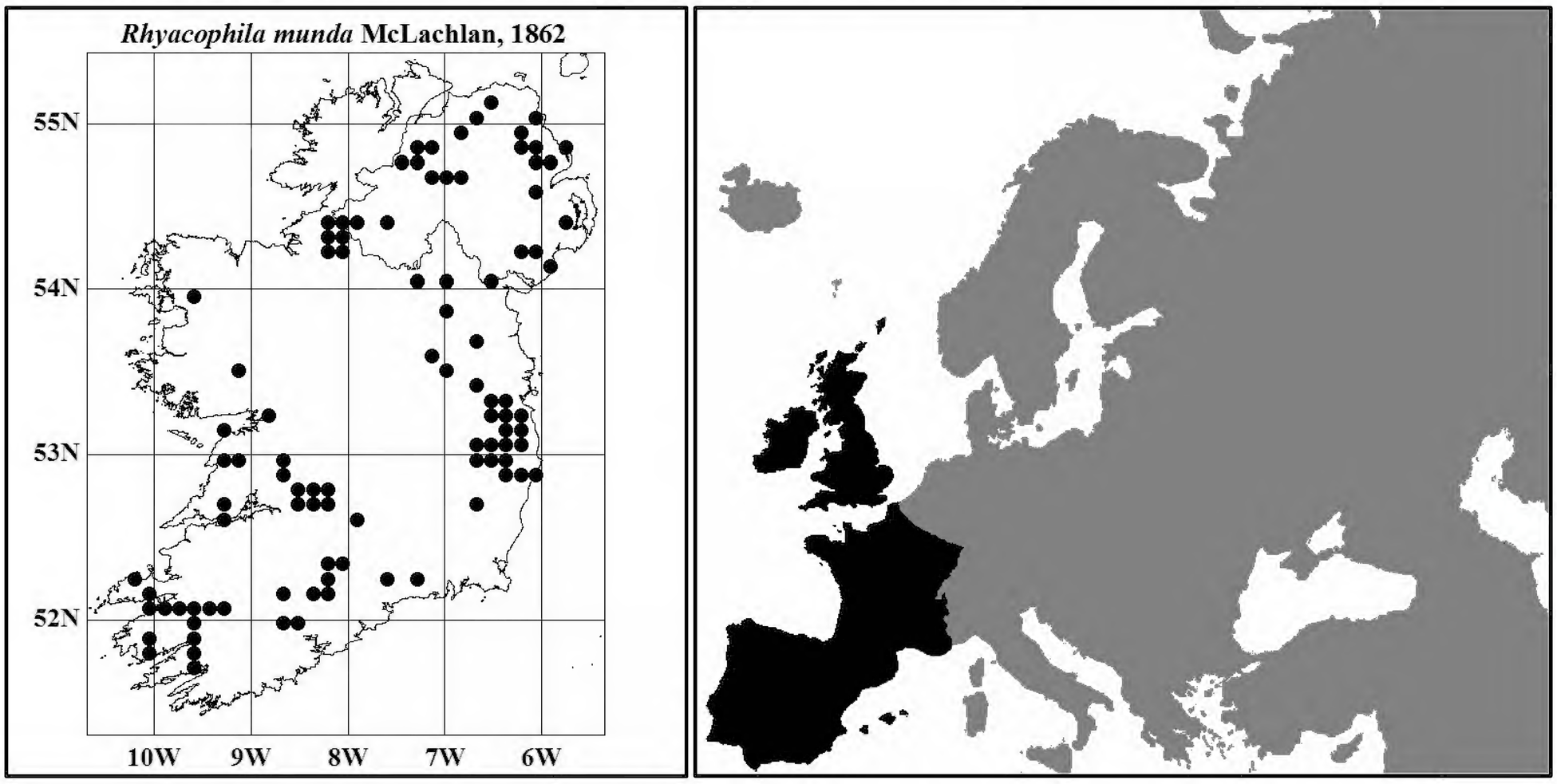
June 1989 & July 1991, (N9673), larvae July 1989, (N9972), larvae July 1989, DAG/JML, det. JML, (N9271), Stackallen, adult 15 September 1945, adult 14 April 1946, adult 20 July 1966, JRH; **Stonyford R.** (N7834), larvae June 1989, (N6956), larvae June 1989, DAG/JML, det. JML; **Trimblestown R.** (N6967), larvae July 1991, DAG/JML, det. JML. **MONAGHAN: Knappagh Water** (H6910), Billy Fox Memorial Park, 3♂♂ 30 May 2013, JPOC. **OFFALY: Little Brosna** (N6050), Birr, 2♂♂ 8 September 1978, JPOC; **Yellow R.** (N5236), larvae June 1989, (N5337), larvae June 1989, DAG/JML, det. JML. **SLIGO: R. Unshin tributary** (G7025), adult 8 September 1946, JRH. **TIPPERARY: Brownstown R.** (S1665), larvae 6 July 1992, DAG/JML, det. JML; **Holycross** (S0854), ♂ 23 June 1984, KGMB; **Kilmastulla R.** (R8172), (R8072), (R7871), (R7269), (R7169), (R6867), (R9173), larvae 1976-1977, MAOC; **R. Black** (S1957), larvae 5 September 1991, 10 March & 6 July 1992, DAG/JML, det. JML; **R. Drish** (S1961), larvae 6 July 1992, (S1759), larvae 5 September, DAG/JML, det. JML; **R. Suir** (S1267), larvae 22 May 1992, (S1362), larvae 10 March 1992, DAG/JML, det. JML, (S0522), Swiss Cottage, Caher [Cahir], ♂ 21 May 1997, JPOC. **TYRONE: Ballinderry R.** (H8176), Cabin Wood Walk, 7♂♂♀ 21 September 2014, JPOC/MAOC, det. JPOC (NMI), (H7678), Kildress Bridge, ♂ 21 September 2014, JPOC/MAOC, det. JPOC, (H7579), Wellbrook Beeting Mill, larva, ♂ pupa & 7♂♂♀ 20 September 2014, JPOC/MAOC, det. JPOC. **WATERFORD: Collingan R.** (X2395), ♂ 15 August 2000, MAOC, det. JPOC; **Killahaly Wood** (X0895), Blackwater Valley, MVLT ♀ 18 July 1986, KGMB, det. JPOC (NMI); **Portlaw Estate** (S4415), ♂ 16 July 1987, JPOC (NMI). **WESTMEATH: Kinnegad R.** (N5344), larvae June 1989, (N6044), larvae June 1989, DAG/JML, det. JML; **Milltownpass R.** (N5042), larvae June 1989, DAG/JML, det. JML; **Mongagh R.** (N5038), larvae June 1989, bog culvert, DAG/JML, det. JML; **R. Deel** (N5565), larvae April 1990 & July 1991, (N6949), larvae September 1989 & July 1991, DAG/JML, det. JML. **WEXFORD: Corock R.** (S8921), 3 larvae & 2♂♂ pupae 20 July 2015, JPOC/MAOC, det. JPOC; **Killoughrim Forest** (S9041), stream, 4 larvae 3 July 2014, JPOC/MAOC, det. JPOC (NMI); **Oaklands Wood** (S7125), stream, ♂♀ 7 June 1983, JPOC/MAOC, det. JPOC; **R. Boro** (S9636), Soldiers Hole, ♂ 23 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9739), Enniscorthy, ♂ 27 July 2015, JPOC/MAOC, det. JPOC; **stream** (S7806), Pollfur Bridge near Fethard, 3 larvae & ♀ pupa 30 June 2014, MAOC/JPOC, det. JPOC; **Urrin R.** (S8943), 6 larvae & ♀ pupa 3 July 2014, JPOC/MAOC, det. JPOC. **WICKLOW: Annalecka Brook** (O0001), 2♂♂ 23 August 1973, JPOC (NMI); **Avoca R.** (T1982), larva 21 July 1973, JPOC; **Avondale** (T1986) [R. Avoca], ♂ 27 May 1988, JPOC; **Browns Beck Brook** (Carrigower R.) (S9194), 2 larvae & 7♂♂3♀♀ 23 July & ♂ 20 September 1973, JPOC; **Glen of the Downs** (O2611), ♂ 27 September 1987, ♂ 22 August 1988 (NMI), JPOC; **Glencree** (O1418), adult 5 August 1946, JRH; **Glencullen R.** (O1919), LT ♂3♀♀ 18-19 August 1973, JPOC; **Glendalough** (T1196), mountain stream/waterfall, ♂3♀♀ 21 July 1973, JPOC; **King's R.** (O0302), 2♂♂5♀♀ 6 June 1973, (O0001),

LTS 2♂♂26♀♀ 22-23 July & 2♂♂12♀♀ 20-21 September 1973, JPOC (NMI); **Knocksink Woods** (O2118), ♂ 19 October 1989, JPOC/MAOC, det. JPOC; **Laragh** (T1496), adult 4 August 1968, FBA, det. T. T. Macan (per IDW); **L. Dan** (O1504), LT 3♀♀ 21-22 June 1973, JPOC; **Lower L. Bray** (O1316), LT 2♀♀ 21-22 July 1973, JPOC; **Ow R.** (T0981), 13♂♂6♀♀ 20 September 1973, JPOC; **Potters R.** (T2985), ♂ pupa & ♂ 21 July 1973, JPOC; **Powerscourt Waterfalls** (O1912), ♀ 31 July 1986, CM/OSF (SINMNH); **R. Annamore** (T1799), 3 larvae, 2♂♂ pupae & 5♂♂ 19 August 1973, JPOC; **R. Avoca** (T1982), larva & ♂ 21 July 1973, JPOC; **R. Avonbeg** (T1487), LT 2♂♂24♀♀ 19-20 September 1973, JPOC; **R. Avonmore** (T1989), 3♂♂♀ 22 May 1973, (T1593), 2♂♂♀ 21 July & 8♂♂♀ 19 September 1973, JPOC; **R. Bray** (O2518), 2 larvae & ♂ 20 July 1973, (O2417), ♂ 13 June 1973, JPOC; **R. Brittas** (O0218), 8♂♂3♀♀ 14 August 1972, ♂ pupa & ♂ 18 August 1973, JPOC; **R. Dargle** (O2216), 4♂♂ 16 August 1972, JPOC; **R. Delgany** (O2610), 6 larvae & 3♀♀ pupae 20 July 1973, JPOC; **R. Derry** (S9764), ♂ pupa & 10♂♂♀ 20 September 1973, (S9764), ♂ pupa 20 September 1973, JPOC; **R. Glencree** (O2014), 2 larvae, ♂♀ pupae & 4♂♂ 19 August 1973, JPOC; **R. Glencullen** (O1919), 3 larvae 22 July & LT ♂3♀♀ 18-19 August 1973, JPOC; **R. Liffey** (O0514), Ballysmuttan, ♂ 18 August 1973, JPOC; **R. Ow** (T0981), 13♂♂6♀♀ 20 September 1973, JPOC; **R. Slaney** (S8892), LT 4♂♂19♀♀ 24-25 July 1973, JPOC; **stream** (O1502), exiting L. Dan, 2 larvae & 2♂♂ pupae 16 August 1972, larva 21 July 1973, ♂ 23 May 1974, JPOC; **stream** (N9911), near Lackan, larva 10 March 1978, JPOC (NMI); **stream** (O0714), entering R. Liffey, ♀ 18 August 1973, (O0515), 2 larvae & ♀ 22 July 1973, JPOC; **stream** (T1593), ♂ 21 July 1973, JPOC; **stream** (O1416), leaving Lower L. Bray, larva 22 July 1973, JPOC; **stream** (S8695), larva, ♀ pupa & 2♀♀ 20 September 1973, JPOC; **stream** (O2006), entering Vartry Reservoir, ♂ 19 August 1973, JPOC; **stream** (O1502), near L. Dan, ♂ 19 August 1973, JPOC; **stream** (T0170), 3 larvae & 4♂♂ 20 September 1973, JPOC; **stream** (O0110), Blessington, ♀ 6 June 1973, JPOC; **stream/waterfall** (O0208), Kilmore, ♀ 6 June 1973, JPOC (NMI); **stream/waterfall** (T1196), at Glendalough, ♂2♀♀ 21 July 1973, JPOC; **stream/waterfall** (N9911), larva 22 July 1973, JPOC; **stream/waterfalls** (O0208), ♀ 24 July 1973, JPOC; **Three Mile Water** (T2989), LT 2♂♂ 20-21 July 1973, JPOC; **Vartry R.** (T2796), ♂2♀♀ 20 July 1973 (NMI), (T2797), 5♂♂ 22 May, ♂2♀♀ 20 July & 2♂♂ 27 September 1973, 2♂♂ 22 April 1974, (O2208), 3♂♂♀ 24 August 1972, (O2108), ♂ 4 August 1972, JPOC; **Vartry R., tributary** (O2105), ♀ 21 June 1973, JPOC.

2. *Rhyacophila munda* McLachlan, 1862

Rhyacophila munda is less common than *R. dorsalis* but is still widely distributed. The free living larvae occur in flowing waters ranging from streams to rivers but require a stony substratum. They are active predators. The species has a limited distribution elsewhere in Europe, having been recorded from Britain, France, Portugal, Spain, the Balearic Islands and the Channel Islands.

Flight period: (May) July–November (5 July–25 November). There is a Dick Harris record on the 12 May.
Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Leitrim, Limerick, Mayo, Meath, Tipperary, Tyrone, Waterford, Westmeath, Wicklow (22/32). The species is known from ninety-seven 10km squares (97/1019).
FIGURES 21-22. Known Irish and European distributions of *Rhyacophila munda*.



Published records

Frost, 1942 (**WICKLOW:** Ballysmuttan (O0514) [R. Liffey], adult material det. MEM); *Beirne and Harris, 1946* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Toner and O'Connell, 1971* (**CORK:** Blarney (R. Martin) (W6176); Fermoy (R. Blackwater) (W8098); Mallow (R. Blackwater) (W5598); Mitchelstown (R. Funcheon) (R8113); Rathduff (R. Martin) (W5984)). **KERRY:** Rathmore (R. Blackwater) (W1693)). *Fahy, 1972a* (**KERRY:** (V9791) [Killarney]). *Fahy, 1973* (**WICKLOW:** Glenmalur stream (T0396)). *Bracken and Murray, 1973* (**CORK:** L. Avaul (V9153)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1325), (O1326), (O1327), (O1427)). *Carter and Wood, 1995* (**ANTRIM:** Clogh R. [indicative D1616]). *Tierney, Kelly-Quinn and Bracken, 1998* (**WICKLOW:** no sites given for the species). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 15 out of 70 sampled sites). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Murroogh (M1508)). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune, the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 72 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson,*

2012 (**WICKLOW**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Muckross Lake (V9685); R. Behy (V6589); R. Flesk (V9789); R. Inny (V5572)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Cashel Burn (D1706); Coopers Water (J2175); Doagh R. (J2693); Douglas Burn (J2299); Glenariff R. (D2221); Glynn R. (J4099); Kellswater (J1698); Legnagooly Burn (D1312); R. Bush (C9436); Six Mile Water (J3195). **ARMAGH:** Forkhill R. (J0115). **DERRY (LONDONDERRY):** Cam Burn (C8421); R. Agivey (C7912); R. Inver (C5301). **DOWN:** R. Annacloy (J4448); R. Annalong (J3719); R. Kinnahalla (J2328); Upper Bann (J2129). **FERMANAGH:** R. Ballinamallard (H2853); R. Black, Drumkeenagh (H0143); R. Roogagh (Glen R.) (G9451); R. Sillees (H1152). **TYRONE:** Dunnyboe Burn (H4599); Glashagh Burn (H6180); Lissan Water (H8081); R. Owenkillew (H6885); R. Strule (H4186); Tullynadall Burn (H4490). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Anon., 2015a* (**CORK:** Glengarriff Nature Reserve (V9157). **DUBLIN:** Liffey Valley Park, Waterstown (O0835)).

Unpublished records and voucher specimens

CARLOW: R. Slaney (S9161), Clonegal, adult 31 August 1946, JRH. **CAVAN: R. Annalee** (H6808), 10♂♂2♀♀ 30 September 1972, (H4511), LT 2♂♂ 27-28 September 1973, JPOC; **R. Barora** (N6893), LT ♀ 1-2 August 1973, JPOC; **stream/waterfall** (H0127), 2 larvae 3 August 1973, JPOC. **CLARE: R. Bleach** (R5795), larva 13 July 1973, JPOC; **R. Cloon** (R1656), ♀♀ 29 August 1973 (NMI), (R1759), ♀ 8 July 1973, JPOC; **R. Cullenagh** (R1388), LT ♀ 9-10 July 1973, JPOC; **R. Denlagh** (R1191), ♀ 30 August 1973, JPOC; **R. Fergus** (R2591), bridge above L. Inchiquin, ♂ 1 September 1973, JPOC; **stream** (R5376), ♂ 12 July 1973, JPOC. **CORK: R. Araglin Catchment** (R8702), larvae, NS & PSG; **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI). **DUBLIN: Glencullen R.** (O1919), 10♂♂♀ 27 September 1977, JPOC; **Owendoher R** (O1324), 3♂♂♀ 27 September 1977, JPOC; **R. Liffey** (O0335), Lucan, adult 12 May 1945, adult 18 September & adult 5 October 1946, JRH. **GALWAY: Black R.** [Headford] (M2647), adult 20 September 1948, JRH; **Dunkellin R./Rahasane Turlough** (M4719), larva 3 May 1984, PB, det. JPOC. **KERRY: Cloghboula** [Cloghvoola] (V5666), Waterville, adult 12 October 1967, JRH; **R. Annaschull** (Q5901), ♂ 17 October 1973, JPOC; **R. Finnihy** (V9072), 2♂♂ 26 August 1973, JPOC; **R. Flesk** (V9689), larva 8 November 1971, EJW (NMI), (W0387), 2 larvae July 1972, EJW (NMI); **R. Gaddagh** (V8491), larva August & ♂ 13 October 1973, JPOC; **R. Glenahoo** (Q5410), 2♂♂ 28 August 1973, JPOC; **R. Glenbeigh** (V6690), ♀ 17 October 1973, JPOC; **R. Inny** (V5673), 2♂♂3♀♀ 26 August 1973, JPOC; **R. Laune** (V8892), 2 larvae May 1972, EJW (NMI); **stream** (V6274), near Derriana Lake, ♀ 1-13 July 1979, JPOC (NMI); **stream** (V8879), exiting L. Lauscaunagh, ♀ 11 October 1872, JPOC. **KILDARE: Grand**

Canal (N9137), Jackson's Bridge, larva 23 April 1977, JS, det. JPOC (NMI). **LEITRIM: Bonet R.** (G8444), larvae 25 June 1991, (G8534), larvae 26 March 1991, (G8433), larvae 17 July 1989, (G8231), larvae 18 July 1989, (G8446), larvae 18 July 1989 & 25 June 1991, (G8741), larvae 25 June 1991, (G8740), larvae 18 July 1989, (G8738), larvae 26 March & 24 June 1991, (G8637), larvae 18 July 1989, DAG/JML, det. JML; **Owenmore R.** (G9137), larvae 24 June & 26 March 1991, (G8839), larvae 18 July 1989 & 26 March 1991, DAG/JML, det. JML. **LIMERICK: R. Shannon** (R6663), Castleconnell, LT 4♂♂ 12-13 July 1973, JPOC. **MEATH: R. Boyne**, Stackallen (N9271), adult 15 September 1945, JRH, (N8768), larva 16 December 1971, AFF, det. JPOC. **TIPPERARY: Kilmastulla R.** (R8172), (R7169), (R6867), larvae 1976-1977, MAOC; **R. Suir** (S1255), larvae 10 March 1992, DAG/JML, det. JML. **TYRONE: Ballinderry R.** (H6980), Dunnamore Walk, ♂ 20 September 2014, JPOC/MAOC, det. JPOC (NMI), (H7579), Wellbrook Beeting Mill, ♂ 20 September 2014, JPOC/MAOC, det. JPOC. **WATERFORD: Mahon Falls** (S3108), stream near, 2 larvae & 2♂♂ pupae 25 July 2015, JPOC/MAOC, det. JPOC; **Portlaw Estate** (S4415), river, ♂ 16 July 1987, JPOC (NMI). **WESTMEATH: R. Deel** (N5565), larvae July 1991, (N6949), larvae September 1989, DAG/JML, det. JML. **WICKLOW: Annalecka Brook** (O0602), larva 23 August 1973, JPOC; **Brown's Beck Brook** (S9398), larva, ♂ pupa & 2♂♂ 24 July, 3♂♂ 20 September 1973, JPOC; **King's River** (O0001), LT 20-21 September 1973 (NMI), (O0401), LT ♂♀ 22-23 July 1973, JPOC; **R. Avoca** (T1982), 6 larvae & ♂ 21 July 1973, JPOC; **R. Avonbeg** (T1487), LT 6♂♂ 19-20 September 1973, JPOC; **R. Avonmore** [Inchavore] (T1799), ♂ 19 August 1973, (T1593), ♀ 19 September 1973, JPOC; **R. Brittas** (O0218), ♂ 18 August 1973, JPOC; **R. Carriggower** (Browns Beck Brook) (S9194), 3♂♂ 20 September 1973, JPOC; **R. Derriana** [Derneen] (S9987), 3 larvae & 4♂♂ 23 July 1973, JPOC; **R. Glencree** (O2014), ♂ 19 August 1973, JPOC; **R. Glencullen** (O1919), LT 2♂♂ 18-19 August 1973, JPOC; **R. Ow** (T0981), 4♂♂ 28 July & 4♂♂ 20 September 1973, JPOC; **R. Slaney** (S8892), LT 10♂♂♀ 24-25 July 1973, JPOC; **R. Vartry** (O2208), 6♂♂ 24 August 1972, JPOC; **stream** (O0714), entering R. Liffey, 2♂♂ 18 August 1973, JPOC; **stream** (O1416), exiting Lower L. Bray, ♀ 22 July & ♂ 18 August 1973, JPOC; **Three Mile Water** (T3287), ♂♀ 19 September 1973, JPOC.

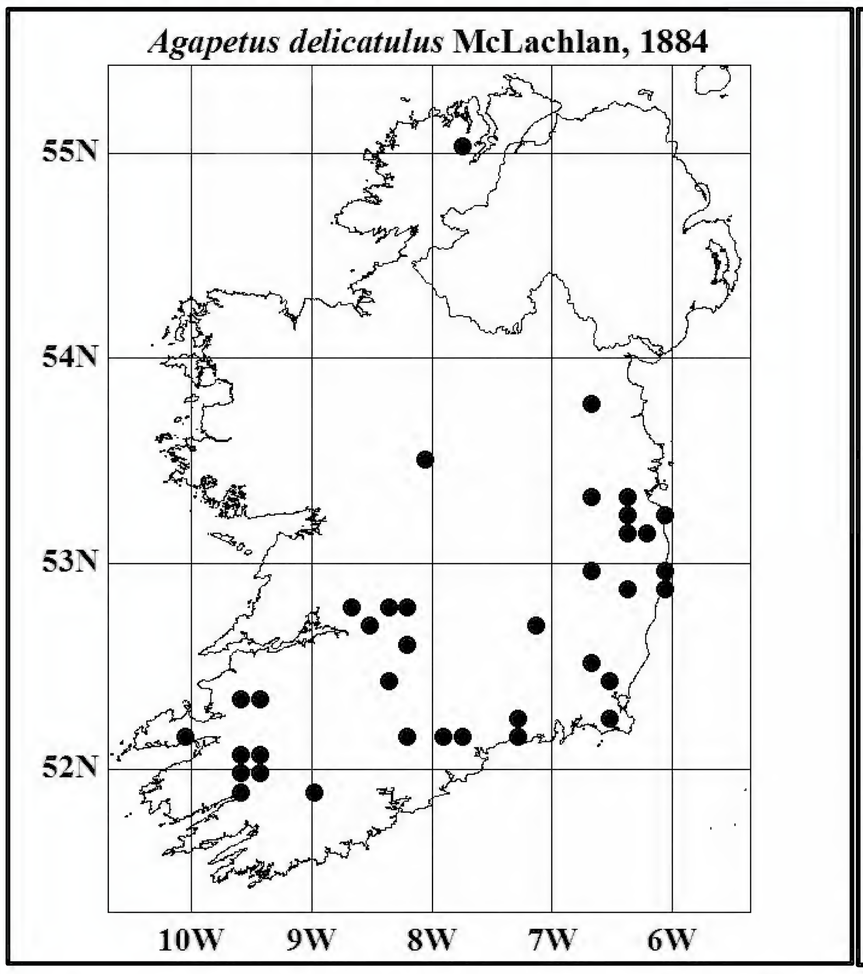
[*Rhyacophila obliterata* McLachlan, 1863

This record from the Kilmastulla River, County Tipperary, is based on a misidentification by H. Phillips. The species was not found during the first Kilmastulla survey by Mary O'Connor [Norton] from 1976-1977).
Bracken, Norton and Phillips, 1991 (unsafe larval identification).]

GLOSSOSOMATIDAE

3. *Agapetus delicatulus* McLachlan, 1884

FIGURES 23-24. Known Irish and European distributions of *Agapetus delicatulus*.



Agapetus delicatulus is mainly known from the southern half of the island but two adults have been recorded from Donegal in the north-west. The larvae occur in flowing water ranging from streams to rivers but require a stony substratum. They build somewhat loose cases of small pebbles and graze on algae and diatoms on the upper surfaces of rocks. The species is widely distributed in Europe.

Flight period: (May) June–August (14 June–16 August). Adults have been taken on an unspecified date in May.

Counties and 10km squares: Clare, Cork, Donegal, Dublin, Kerry, Kildare, Kilkenny, Limerick, Meath, Roscommon, Tipperary, Waterford, Wexford, Wicklow (14/32). The species is known from thirty-seven 10km squares (37/1019).

Published records

King, 1888a (**KERRY:** Denough [Deenagh] R. (V9792); Horses' Glen (V9981); Torc Cascade (V9684)). *King, 1889a* (**KERRY:** Denough [Deenagh] R. (V9792); Horses' Glen, Mangerton (V9981); Torc Cascade (V9684) (all near Killarney)). *King and Halbert, 1910* (**KERRY:** Deenagh R. (V9792); Horse's Glen (V9981); Torc Cascade (V9684). **WEXFORD:** Johnstown Castle (T0216) [small lakes]). *Frost, 1942* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Praeger, 1950* as *Agapethus* (**KERRY:** three stations. **WEXFORD**). *Fahy, 1972a* (**KILKENNY:** (S6056) [corrected from S6156]. **MEATH:** (N8684) [near Siddan]. **ROSCOMMON:** (M9755)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**IRELAND:** only known from the southern half of island). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1325), (O1326), (O1327), (O1427)). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** southern half). *Bracken, Norton and Phillips, 1991* (**TIPPERARY:** Kilmastulla R.). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** southern half). *Kelly-Quinn et al., 2005*

(**IRELAND:** rivers). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** L. Leane (V9686); Muckross Lake (V9685)). *Anon., 2015a* (**KERRY:** Killarney National Park (V9590)).

Unpublished records and voucher specimens

CLARE: Gourna R. (R5166), 19♂♂11♀♀ 12 July 1973, JPOC (NMI). **CORK: Gearagh** (W3371), LT 4♀♀ May 1989, KGMB, det. JPOC; **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.). **DONEGAL: Kilmacrenan** (C1420), 2♂♂ 27a June 1891, [JJFXK], conf. JPOC (BMNH). **KERRY: Killarney**, ♂ 18 July 1887, [JJFXK], det. RMCL, conf. JPOC (BMNH), adult July 1940, BPB, det. JRH; **R. Owenschull** (Q5901), 10♂♂4♀♀ 7 July 1973, JPOC; **R. Roughty** (V9371), 2♂♂ 4 July 1973, (V9673), stream entering, ♂ pupa & 8♂♂9♀♀ 4 July 1973, JPOC; **stream** (Q9025), Kilflynn, 3♂♂♀ 7 August 1973, JPOC. **LIMERICK: Galbally** (R7927), ♂ 14 June 1985, KGMB; **R. Shannon** (R6663), Castleconnell, LT ♀ 12-13 July 1973, JPOC. **TIPPERARY: Ballybrado House, Cahir** (R0620), ♀ 14 July 1986, KGMB, det. JPOC (NMI); **Glenpaudeen** (R9150) [near R. Muiteen], ♂ 14 June 1985, KGMB; **Kilmastulla R.** (R8172), (R8071), (R7871), (R7269), (R9173), larvae 1976-1977, MAOC. **WATERFORD: Cappoquin** (X0999), ♂3♀♀ 21 July 1902, JJFXK (misidentified as *Agapetus ochripes* (*A. comatus*)), det. JPOC (NMI); **Colligan R.** (S2205), ♂2♀♀ 15 August 2000, JPOC; **Fennor** (S5201), at light, ♂ 12 July 1987, JPOC; **Portlaw Estate** (S4415), river, 5♂♂2♀♀ 16 July 1987, JPOC. **WEXFORD: Killoughrim Forest** (S9041), stream, LTS ♂19♀♀ 28 July 2015, JPOC/MAOC, det. JPOC (NMI); **R. Boro** (S9636), Soldiers Hole, ♂ 23 July 2015, JPOC/MAOC, det. JPOC; **Urrin R.** (S8943), ♂ 3 July 2014, JPOC/MAOC, det. JPOC. **WICKLOW: Little Bray** (O2518), 4♂♂♀ 31 July 1986, CM/OSF (SINMNH); **Lower L. Bray** (O1416), outlet, ♂♂♀♀ 31 July 1986, JPOC; **R. Bray** (O2518), ♂♀ 22 July (NMI) & ♂ 14 August 1972, 2♂♂ 20 July 1973, JPOC; **R. Dargle** (O2216), 2♂♂ 16 August 1972, JPOC; **R. Ow** (T0981), ♂♀ 28 July 1973, JPOC; **R. Potter** (T2985), 11♂♂5♀♀ 21 July 1973, JPOC; **R. Slaney** (S8892), LT 16♂♂223♀♀ 24-25 July 1973, JPOC; **Vartry R.** (T2797), 9♂♂♀ 20 July 1973 (NMI), (O2108), ♂ 4 August 1972, JPOC.

4. *Agapetus fuscipes* Curtis, 1834

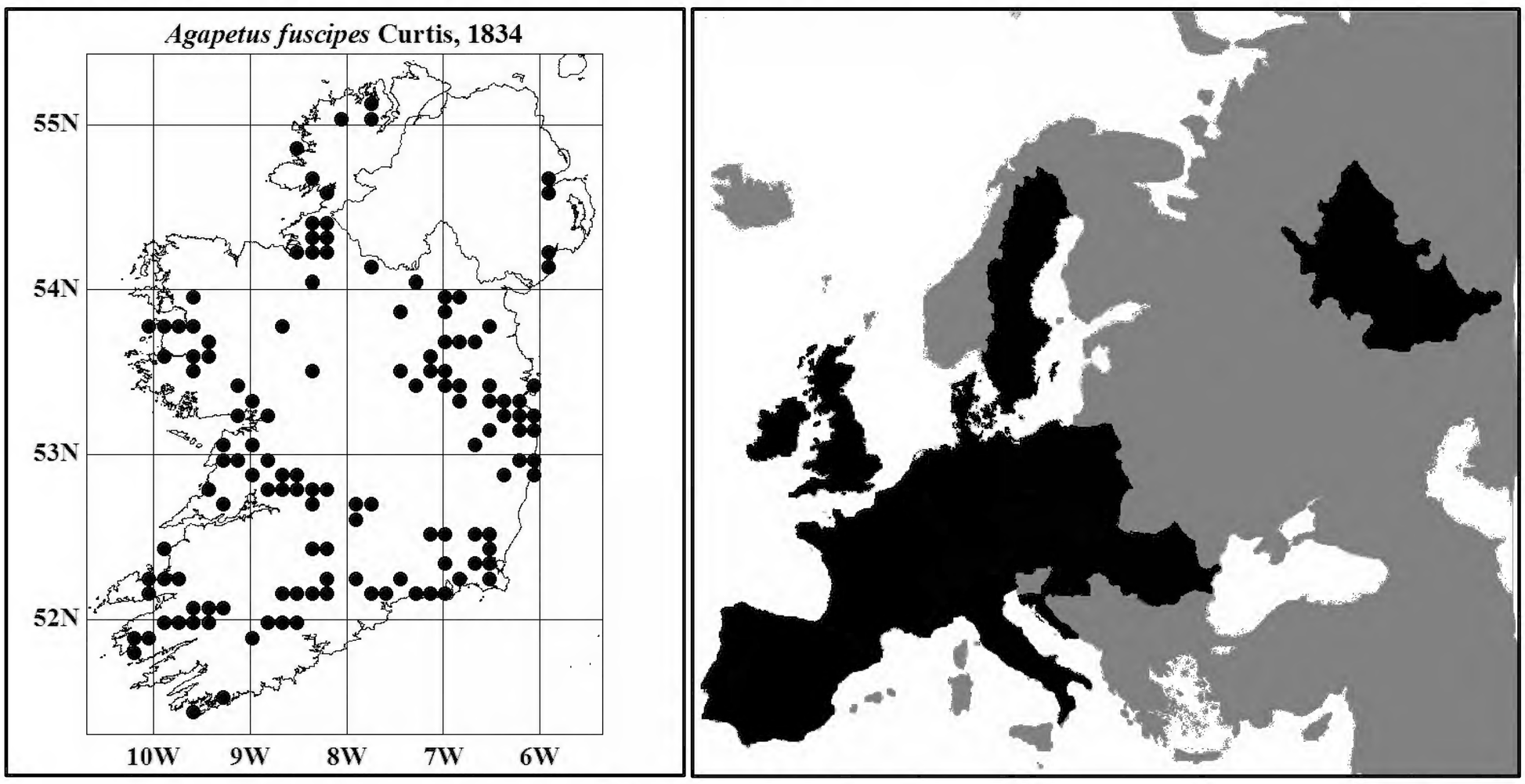
Agapetus fuscipes is a widely distributed and common species in Ireland. The larvae occur in flowing waters ranging from streams to rivers and on exposed lake shores. A stony substratum is required. They build somewhat loose cases of small pebbles and scrape or graze on algae and diatoms on the upper surfaces of rocks. They can also feed on algae attached to the inner surface of the case, a potential advantage under high water conditions (Cox and Wagner, 1989). In the Glossosomatidae, a new case is made with each larval instar (Wichard, Arens and Eisenbeis, 2002). In the Glenfinnish River, County Cork, seven larval instars were identified. There was large variation in the size of instar VII probably due to sexual dimorphism. The species was

univoltine in the region (Sangpradub, Giller and O'Connor, 1999). The sexes are attracted by acoustic signals and pheromones (Waringer and Graf, 2011). The species is widely distributed in Europe.

Flight period: April–October (5 April–20 October).

Counties and 10km squares: Antrim, Carlow, Cavan, Clare, Cork, Donegal, Down, Dublin, Galway, Kerry, Kildare, Kilkenny, Leitrim, Limerick, Louth, Mayo, Meath, Roscommon, Sligo, Tipperary, Waterford, Westmeath, Wexford, Wicklow (24/32). The species is known from 132 10km squares (132/1019).

FIGURES 25-26. Known Irish and European distributions of *Agapetus fuscipes*.



Published records

McLachlan, 1885 (**ANTRIM:** Cave Hill (J3279)). *King, 1888a* (**ANTRIM:** Cave Hill (J3279). **DUBLIN:** Howth (O2838). **GALWAY:** Ma'am Burn (L9653). **KERRY:** Denough [Deenagh] (V9792) and Flesk (V9689) Rivers; Gap of Dunloe (V8787); Horses' Glen (V9981); Muckross (V9786); Spa Well (W0092); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084). **SLIGO:** near Sligo (G7035)). *Johnson, 1894* (**DONEGAL:** Coolmore (G8566)). *McLachlan, 1903* (**KERRY:** Killarney). *King and Halbert, 1910* (**ANTRIM:** Cave Hill (J3279). **DONEGAL:** Clonkillybeg [L.] (C1219); Coolmore (G8566); Loughs Keel (C1524) and Salt (C1226). **DUBLIN:** Howth (O2838). **GALWAY:** Maam R. (L9653). **KERRY:** Flesk (V9689) and Deenagh (V9792) Rivers; Gap of Dunloe (V8787); Horse's Glen (V9981); Muckross (V9786); Spa Well (W0092); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084). **SLIGO:** near Sligo (G7035). **WEXFORD:** Johnstown Castle (T0216) [small lakes]). *Halbert, 1912* (**MAYO:** Clare Island (L6985); Louisburgh (L8080); Westport (L9984)). *Beirne and Harris, 1946* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Kimmins, 1960* (**KERRY:** Killarney ("probably *fuscipes*")). *Carter, 1967* (**CORK:** Cape Clear Island (V9421)). *Toner and O'Connell, 1971* (**CORK:** Blarney (R. Martin) (W6176); Fermoy (R. Blackwater) (W8098); Mallow

(R. Blackwater) (W5598); Mitchelstown (R. Funcheon) (R8113); Rathduff (R. Martin) (W5984). **KERRY:** Rathmore (R. Blackwater) (W1693)). *Fahy, 1972a* (**GALWAY:** (M3535). **LOUTH:** (N9882) [near Collon]. **MAYO:** (M0968) [near Toormakeady]. **TIPPERARY:** (R8161), (R8114)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Bracken, 1980b* (**MEATH:** R. Tolka (O0142), north of Dunboyne). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480)). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor and O'Connor, 1982* (**DONEGAL:** Coolmore [G8566]). *O'Connor and Good, 1984* (**SLIGO:** Ben Bulben, stream (G7346)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9191), (V9290); Muckross Lake (V9585), (V9685)). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1325), (O1326), (O1327), (O1427)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Twomey and Giller, 1991* (**CORK:** tributary of R. Araglin (R8702)). *Bracken, Norton and Phillips, 1991* **(TIPPERARY:** Kilmastulla R.). *Giller, Sangpradub and Twomey, 1991* (**CORK:** R. Araglin, Glenfinish Bridge (R8702)). *Giller and Twomey, 1993* (**CORK:** Glenfinnish R. (R8702); R. Awbeg (R6804)). *Tierney, Kelly-Quinn and Bracken, 1998* (**WICKLOW:** no sites given for the species). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *O'Halloran et al., 1998* (**CORK:** Glenfinnish R.). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706)). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Anon., 2011* (**WEXFORD:** Ballyfinoge Stream (T0414); Ballyvoleen River (S9625)). *Gammell, 2011* (**WEXFORD:** R. Sow, Edenvale (T0427)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**DONEGAL:** Kiltooris [Lake] (G6797); Namanfin [lake top of Corker R. near Ardara] (G7983); Veagh [L. Beagh] (C0121). **GALWAY:** L. Corrib (M2541); L. Fee (L7961); L. Nafooey (L9759). **KERRY:** Muckross Lake (V9584). **MAYO:** L. Mask (M1060). **ROSCOMMON:** L. O'Flynn (M5879)). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); Muckross Lake (V9485); R. Flesk (V9789)). *O'Connor and Hancock, 2014* (**DOWN:** Bloody Bridge R. (J3826); R. Burren (J3534); R. Shimna (J3532)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *Baars et al., 2014* (**IRELAND:** recorded in 2 of 12 upland peatland lakes). *Anon., 2015a* (**DUBLIN:** Liffey Valley Park, Waterstown (O0835). **KERRY:** Killarney National Park (V9490)). *Woodward et al., 2015* (**CORK:** Glenfinish R. (R8702)).

Unpublished records and voucher specimens

IRELAND: ♂, JJFXK, conf. JPOC (NMI).

ANTRIM: Belfast (J3473), ♂ 1885, CGB, conf. JPOC (NMI). **CARLOW: St**

Mullins (S7237), small river entering R. Barrow, 4♂♂ 17 June & ♂♀ 1 July 1991, JPOC/MAOC, det. JPOC, (S7238), stream, ♀ pupa & 4♂♂2♀♀ 5 July 2014, JPOC/MAOC, det. JPOC. **CAVAN: Barora R.**, tributary (N6889), 2♂♂♀ 4 October 1972, JPOC; **Dún an Rí** (N7997), stream, ♂♂ 13 June 1996, JPOC (NMI); **R. Annalee** (H4511), ♂ 3 October 1972, JPOC; **R. Erne** (N4293), ♂ 16 June 1973, JPOC; **R. Swanlibar** (H1524), ♀ pupa 3 August 1973, JPOC; **stream** (N6697), near Baileborough, ♂ 20 May 1974, JPOC. **CLARE: Aille R.** (R1397), Lisdoonvarna, ♂ 21 April 1982, JPOC/MAOC & ♂ 8 July 1981, ♂ 25 May 1992, JPOC; **Doonbeg R.** (R1261) [Greygrove R.], 2 larvae & 30♂♂♀ 9 July 1973, JPOC; **L. Inchiquin** (R2789), ♀ 4-6 June 1973, JPOC, larva 1996/1997, JW; **R. Annageeragh** (R0371), 2♀♀ 9 July 1973, JPOC; **R. Cloon** (R1656), ♂ 29 August 1973, (R1759), larva & ♂ 8 July 1973, JPOC; **R. Cullenagh** (R1388), LT ♂ 9-10 July 1973, JPOC; **R. Denlagh** (R1191), 4♂♂ 30 August 1973, JPOC; **R. Fergus** (R2688), 7♂♂♀ 1 September 1973, (R2591), 4♂♂♀ 1 September 1973, (R3480), 2♀♀ 11 July 1973, JPOC, (R2888), Corofin, adult 12 May 1947, Rich, det. JRH; **R. Rinne** (R4174), 2♂♂4♀♀ 12 July 1973, JPOC; **Slieve Carran** (M3204), Burren, ♂♂ 11 September 1986, stream-side *Corylus* scrub at cliff base, MCDS, det. JPOC (NMI); **stream** (R6877), entering Tinarana Bay, L. Derg, ♂ 17 June 1976, JPOC (NMI); **stream** (R5376), ♂ pupa & 4♂♂ 12 July 1973, JPOC; **stream** (R5267), ♂ pupa & 9♂♂♀ 12 July 1973, JPOC; **stream** (R2592), 6♂♂ 10 July 1973, JPOC; **stream** (R4086), ♂♀ 1 September 1973, JPOC. **CORK: Clear Island** (V9521), ♂ 2 June 1985, KGMB; **east of Mallow** (W5898) [R. Blackwater], 4♂♂♀ 4 August 1986, CM/OSF (SINMNH); **Gearagh** (W3371), Annahala Bridge, ♂ 30 May 1985, KGMB, det. JPOC; **L. Hyne** (W0927), wet seepage, ♂♂ 12 July 1999, PA, det. JPOC; **R. Araglin** (R8703), larvae 1988-1990, NS. **DONEGAL: Coolmore** (G8566), 2♂♂ July 1894, WFJ, conf. JPOC (NMI), stream (G8566), ♂ 26 June 1981, JPOC (NMI); **Kilmacrennan** (C1420), adult June & July 1891, G. T. Porritt (TMM) (per IDW). **DOWN: Bloody Bridge R.** (J3826), 3♂♂ 2 July 1912, JJFXK, det. JPOC (HMAG); **R. Burren** (J3534), 2♂♂ 19 August 1912, JJFXK, det. JPOC (HMAG); **R. Shimna** (J3532), 3♂♂ 1 July 1912 JJFXK, det. JPOC (HMAG); **Tollymore National Park** (J3532), stream, 5♂♂ 22 June 2014, JPOC (NMI), (J3432), stream, ♂ 22 June 2014, JPOC. **DUBLIN: Bohernabreena** (O0921), river, 7♂♂♀ 11 June 2015, JPOC/MAOC, det. JPOC; **Loughlinston** [Loughlinstown] **R.** (O2323), adult 7 August 1947, JRH; **R. Dodder** (O1730), Clonskeagh, adult 4 September 1945, adult 15 June 1947, Dartry, det, JRH; **R. Liffey** (O0335), Lucan, adult 15 May 1945, JRH, (O0635), weir at Wren's Nest, ♂ 12 August 2014, JPOC. **GALWAY: Barna** (M2322), ♂ 5 April 1980, DMG, det. JPOC (NMI); **Dunkellin R./Rahasane Turlough** (M4719), ♂ pupa 3 May 1984, PB, det. JPOC; **Killian R.** (M7449), Carrowmore, road bridge u/s confluence with Shiven R., 5 larvae 12 May 2012, MG; **L. Corrib** (M2341), Middle, ♂ 18 May 1980, BC, conf. JPOC (NMI). **KERRY: Crinnagh R.** (V9481), 6♂♂ 4 August 1986, CM/OSF (SINMNH); **Dreenagh Head** (Q7132), adult 14 September 1982, EGH, det. RAJG

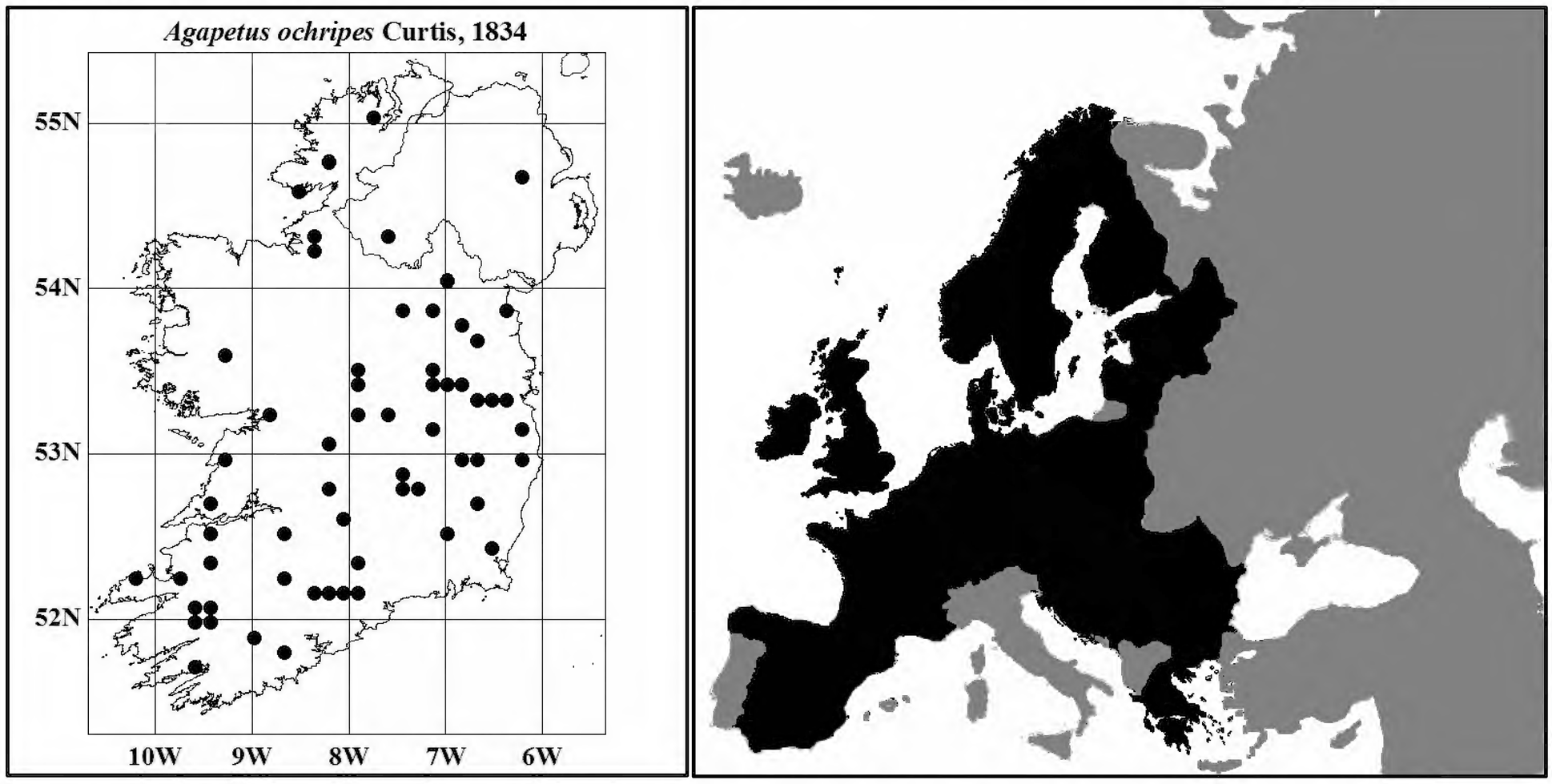
(BMAG) (per IDW); **Killarney**, ♂♂♀♀ 27 June, ♂ 3 August, ♂ 8 August & ♀ 11 August 1887, JJFXK, conf. JPOC (NMI), adult July 1940, BPB, det. JRH, adult 20 October 1946, JRH; **Killarney Lakes**, trout stomachs, 26 larvae & 61♂♂39♀♀ pupae, UCD, det. JPOC; **Mangerton Mountain** (V9781), Punch Bowl area, 670m (2200ft), ♂♂♀♀ 15 September 1984, S. Ryan, det. JPOC; **L. Currane** (V5265), ♂♀ 6 July 1973, JPOC; **L. Doon** [L. Slat] (Q6107), ♀ 7 July 1973, JPOC; **L. Guitane** (W0185), ♀ 3 July 1973, JPOC; **L. Leane**, 35 larvae & 3♂♂♀ pupae exposed rocky shore, larva reed bed, 247 larvae & 10♂♂14♀♀ pupae sheltered rocky shore, 10 April 1973, (V9686), boat house, ♂ 28 May 1974, (V9291), Golf Course, 4♂♂3♀♀ 29 May 1974, ♂ 1 June 1995, (V9488), Ross Castle, ♀ 29 May 1974, Ross Island, ♂2♀♀ 18 May 1973, ♀ 13 June 1973, JPOC; **Mangerton** (V9781), Punch Bowl area, ♂♂♀♀ 15 September 1984, S. Ryan, det. JPOC (NMI); **Muckross Lake** (V9684), Torc shore, ♂ 12 October & 11♂♂10♀♀ 24 August 1973, 36 larvae exposed rocky shore & 17 larvae sheltered rocky shore, 2♀♀ 13 April 1973, JPOC; **O'Sullivan's Cascade** (V9188), 6 larvae 13 April 1973, JPOC; **pass** (Q6909), south of Camp, ♀ 10 June 1982, HM, det. H. Malicky; **R. Annaschull** (Q5901), ♂ 17 October 1973, JPOC; **R. Cloghereen** (V9786), near Blue Pool, ♂♂♀♀ 28 May 1995, near hotel (V9787), 9♂♂3♀♀ 28 May 1995, JPOC; **R. Cummeragh** (V5872), 15♂♂3♀♀ 6 July & ♂♀ 26 August 1973, JPOC; **R. Curraheen** (Q7811), LT ♂ 7-8 July 1973, JPOC (NMI); **R. Flesk** (V9789), ♂♂ 5 September (NMI) & 3♂♂ 5 September 1972, (V9689), 36♂♂10♀♀ 25 June 1973, 2♂♂ 28 May 1974, (V9789), 4♀♀ 5 September 1972, (W0185), 13♂♂3♀♀ 10 October 1972, JPOC; **R. Owenschull** (Q5901), 2♂♂ 7 July 1973, JPOC; **stream** (R. Dereen, Ring of Kerry) (V4872), 2♂♂ 26 August 1973, JPOC; **stream** (V9385), at Dinish, ♂ 31 May 1995, JPOC; **stream** (Q6208), entering R. Owencashla, ♂ 28 August 1973, JPOC; **Torc Cascade/stream** (V9684), ♀ 28 May (NMI) & ♂ 29 May 1974, JPOC. **KILDARE: Louisa Bridge** (N9936), very narrow fast-flowing streamlet, larvae 12 March 1984, IDW. **KILKENNY: The Coum R.** (S6337) where it enters R. Nore, Inistioge, 12♂♂9♀♀ 10 July 2014, JPOC/MAOC, det. JPOC; **Woodstock House** (S6437), Inistioge, ♂ 24 July 1987, JPOC. **LEITRIM: Bonet R**. (G8030), ♂ 6 August 1989, JPOC, (G8444), larvae 25 June 1991, (G8534), larvae 26 March & 24 June 1991, (G8231), larvae 25 March & 24 June 1991, (G8446), larvae 25 June 1991, (G8741), larvae 26 March & 25 June 1991, (G8738), larvae 26 March & 24 June 1991, (G8637), larvae 25 March 1991, all DAG/JML, det. JML; **Glencar Waterfall** (G7543), ♂♂ 25 August 1992, JPOC; **Owenmore R.** (G8839), larvae 18 July 1989 & 26 March 1991, DAG/JML, det. JML. **LIMERICK: Galbally** (R7927), ♀ 14 June 1985, KGMB. **MAYO: Clare Island** (L6985), MT, ♂ 11 June 1998, SF, conf. JPOC (NMI); **Croagh Patrick** (L9080), 2000ft [610m], Louisburgh, adult 14 July 1910, CJM, det. JRAG (IM) (per IDW); **L. Feeagh** (F9700), larvae 1996/1997, JW. **MEATH: Kells Blackwater R.** (N8172), 3 larvae 8 July 1972, AFF, det. JPOC; **R. Blackwater** (N7739), Enfield, adult 13 July 1947, JRH; **R. Boyne** (N8768), 3 larvae 16 December 1971, AFF, det. JPOC, (N6340),

larvae April 1990, (N7149), larvae July 1991, DAG/JML, det. JML; **Stonyford R.** (N7834), larvae June 1989, DAG/JML, det. JML; **Trimblestown R.** (N6967), larvae June 1989 & July 1991, DAG/JML, det. JML. **SLIGO: Clogh Valley** (G7346), stream, ♂♂♀♀ 30 July 1983, JAG, det. JPOC (NMI); **L. Arrow** (G7711), adult 1964, MK; **L. Gill** (G7534), ♀ 2 June 1982, HM, det. H. Malicky; **The Glen** (G6233), ♂ 26 August 1992, JPOC. **TIPPERARY: Breagagh R.** (S1458), larvae 5 September 1991, DAG/JML, det. JML; **Brownstown R.** (S1665), larvae 5 September 1991, DAG/JML, det. JML; **Kilmastulla R.** (R8172), (R8072), (R7571), (R7269), (R7169), (R6867), (R9173), larvae 1976-1977, MAOC; **R. Ara**, u/s of Tipperary Town (R8735), 8 larvae 18 August 1971, AFF, det. JPOC; **R. Black** (S1957), larvae 5 September 1991, DAG/JML, det. JML; **R. Clover** (S1959), larvae 5 September 1991, DAG/JML, det. JML; **R. Drish** (S2163), larvae 5 September 1991, (S2063), larvae 19 September 1991, (S1759), larvae 5 September 1991, DAG/JML, det. JML; **R. Suir** (S1258), larvae 19 September 1991, (S1255), larvae 19 September 1991, DAG/JML, det. JML. **WATERFORD: Annestowns R. Valley Reserve** (S5000), small outflow stream from pond, 4 larvae 8 July 2014, MAOC/HOC, det. JPOC; **Ballymacaw Cove** (X6499), small river running down to cove, 8♂♂ 22 May 1997, JPOC; **Colligan R.** (S2205), 2♂♂ 15 August 2000, JPOC; **Dunhill Castle** (R5000) [R. Ann], 2♂♂ 11 July 1989, JPOC/MAOC, det. JPOC; **near the Vee** (S3202), streams, 9♂♂ 20 July 1987, JPOC; **pass in the Knockmealdown Mountains** (S0408), ♂ 17 August 1981, HM, det. H. Malicky; **Portally Cove** (X6799), stream, ♂♂ 1 July 1984, 3♂♂♀ 24 May 1997, JPOC; **stream** (S3411), the Comeraghs, ♂♂♀ 13 July 1987, JPOC. **WESTMEATH: Belvidere House** (N4247), small river, ♂♂ 31 May 1991 & 4 July 1996, JPOC; **Milltownpass R.** (N5042), larvae June 1989, DAG/JML, det. JML; **R. Deel** (N5565), larvae September 1989, April 1990 & July 1991, (N5854), larvae April 1990, (N5954), larvae April 1990, (N6949), larvae April 1990, DAG/JML, det. JML. **WEXFORD: Corock R.** (S8921), ♂ 20 July 2015, JPOC/MAOC, det. JPOC; **Fethard**, river near (S7806), 2♂♂3♀♀ 17 June 1990, JPOC; **J. F. Kennedy Park** (S7218), streams, ♂♂ 14 July 1987, 2♂♂ 20 August 1996, JPOC, (S7219), 8♂♂2♀♀ 7 July 2014, JPOC; **Killoughrim Forest** (S9041), stream, 15♂♂ 4 June 1987, JPOC, larva, ♀ pupa & ♂ 3 July 2014, JPOC/MAOC, det. JPOC; **Oaklands Wood** (S7125), stream, 5♂♂ 7 June 1983, ♂♀ 12 June 1990, 2♂♂ 9 July 2014, JPOC; **stream** (S7806), Pollfur Bridge near Fethard, ♀ pupa 30 June 2014, MAOC/JPOC, det. JPOC; **Tintern Abbey** (S7910), small river, 32♂♂ 15 June & ♀ 6 July 1990, JPOC; **Urrin R.** (S9738), 4♂♂♀ 28 July 2015, JPOC/MAOC, det. JPOC; **WICKLOW: Brown's Beck Brook** (S9398), ♂ pupa 24 July 1973, JPOC; **Delgany R.** (O2610), ♀ pupa & 3♂♂ 20 July 1973, JPOC; **Glen of the Downs** (O2611), ♂♂ 22 August 1988, JPOC; **Glenealy**(T2492), stream at, ♂♂♀♀ 22 May 1973, JPOC (NMI); **Lacken** (Lackan) (N9911), stream near, 5♂♂ 31 August 1986, JPOC, (O0110), brooks near, 6♂♂♀ 31 July 1986, CM/OSF (SINMNH); **Ow R.** (T0981), ♂ 8 July 1973, JPOC; **Potters R.** (T2985), ♀ 21 July 1973, JPOC; **R. Bray** (O2518), 2♂♂ 2 August & ♀ 14

August 1972, JPOC; **stream** (T2796), Glenealy, 29♂♂4♀♀ 22 May 1973, JPOC; **Vartry R.** (T2796), ♂ 20 July 1973 (NMI), (O2108), 2♂♂ 4 August 1972, JPOC; **waterfall/stream** (N9911), lake drive near Lacken, 2♂♂ 22 July 1973, JPOC.

5. *Agapetus ochripes* Curtis, 1834

FIGURES 27-28. Known Irish and European distributions of *Agapetus ochripes*.



Agapetus ochripes is widely distributed in Ireland. The larvae occur in flowing waters ranging from streams to rivers but require a stony substratum. They build somewhat loose cases of small pebbles and scrape or graze on algae and diatoms on the upper surfaces of rocks. The species is widespread in much of Europe but is not known from Portugal or Italy.

Flight period: April–September (30 April–30 September).

Counties and 10km squares: Antrim, Carlow, Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Laois, Leitrim, Limerick, Louth, Mayo, Meath, Offaly, Sligo, Tipperary, Waterford, Westmeath, Wexford, Wicklow (25/32). The species is known from sixty 10km squares (60/1019).

Published records

King, 1888a as *Agapetus comatus* (**DUBLIN:** Lucan Demesne (O0235) [R. Liffey]. **KERRY:** Ardagh Laogh (V9888); Denough [Deenagh] R. (V9792); Ross Castle (V9488). **WESTMEATH:** Ballykeeron [Ballykeeran] (N0744); Coosan Point (N0446). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *McLachlan, 1903* as *Agapetus comatus*? (**CORK:** Valentia). *King and Halbert, 1910* as *Agapetus comatus* (**ANTRIM:** L. Neagh (J1187). **DONEGAL:** Largy (G6675) and Lennan (C1521) Rivers. **DUBLIN:** Lucan demesne (O0235) [R. Liffey]. **KERRY:** Ardagh L. (V9888); Deenagh R. (V9792); Ross Castle (V9488); ?Valentia. **WATERFORD:** Glenshelane (S1203). **WESTMEATH:** Ballykeeran (N0744); Coosan Point (N0446) [L. Ree]. **WEXFORD:** Edenvale (T0427) [R. Sow]. **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Frost, 1942* as *Agapetus comatus* (**KILDARE:** Straffan

(N9229) [R. Liffey]). *McCarthy, 1972* (**DONEGAL:** Glen R. (Owenea R.) (G8893)). *Fahy, 1972a* (**KERRY:** (V9791) [Killarney]. **LOUTH:** (O0695). **TIPPERARY:** (M8902), (S0054) (corrected from S0053). *Bracken and Murray, 1973* (**CORK:** L. Avaul (V9153)). *Speight, 1977* as *Agapetus comatus* (**WESTMEATH:** Coosan Lake [should be Coosan Point (N0446)]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V9686); Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk; R. Laune). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Flesk (V9789); R. Galey (R0139)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Arney R. (H2336)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** R. Sillees (H2341)).

Unpublished records and voucher specimens

CARLOW: R. Slaney (S9161), Clonegal, adult 31 August 1946, JRH (as *Agapetus comatus*); **stream** (S7439), St Mullins, ♂♀ 17 June 1991, JPOC. **CAVAN: L. Ramor near river** (N5987), ♂ 10 August 1972, JPOC; **R. Annalee** (H6810), 7♂♂2♀♀ 1 September & 4♂♂6♀♀ 30 September 1972, JPOC; **R. Erne** (N4293), near Darrin Bridge, 2♂♂2♀♀ 16 June 1973, JPOC; **stream** (N6193), ♂2♀♀ 2 August 1973, JPOC; **stream** (N6113), 4♂♂ pupae 2 August 1973, JPOC. **CLARE: Creegh R.** (Q9966), 2♂♂2♀♀ 29 August 1973, JPOC; **Cullenagh R.** (R1388), LT ♀ 9-10 July 1973, JPOC. **CORK: Ballyhooly** (W7199) [R. Blackwater], ♂ 10 June 1979, KGMB, det. JPOC (NMI); **Gearagh** (W3371), Annahala Bridge, ♂ 30 May 1985, KGMB; **Inishannon** (W5257) [R. Bandon], ♀ 30 April 1985, KGMB; **Kilcoman [Bog]** (R5811), MVLT 4♀♀ 12 June 1992, KGMB, det. JPOC; **L. Avaul** (V9153), adult, MK; **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.). **DUBLIN: Lucan** (O0235), ♀ 25 August 1888 (misidentified as *Agapetus delicatulus*), [JJFXK], det. JPOC (BMNH); **R. Dodder** (O1328), millrace, Templeogue, adult 15 June 1947, JRH (as *Agapetus comatus*); **R. Liffey** (O0335), Lucan, adult 15 September 1946, adult 20 May 1954, JRH (as *Agapetus comatus*), (O0735), Strawberry Beds, 2♂♂ 12 August 2014, 5♂♂♀ 29 August 2015 (NMI), JPOC. **FERMANAGH: Arney R.** (H2336), Old Drumane Bridge, ♀ 1 September 2015, JPOC/MAOC, det. JPOC. **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva 15 April 1984, PB, det. JPOC. **KERRY: Gap of Dunloe** (V8786), streams, 3♂♂♀ 10 July 1986, JPOC; **Glenahoo R.** (Q5410), 9♂♂5♀♀ 7 July 1973, JPOC; **Killarney**, ♂ 25 June & ♂ 29a June, ♂ 5 August 1887, JJFXK, conf. JPOC (NMI); **L. Leane** (V9686), boat house, ♀ 23 August 1973, ♂3♀♀ 28 May 1974, JPOC; **R. Curraheen** (Q7811), LT ♀♀ 7-8 July 1973, JPOC (NMI); **R. Flesk** (V9789), ♂♂ 5 September 1972, JPOC (NMI), 7♂♂8♀♀ 3 July (NMI) & 14♂♂5♀♀ 25 June 1973, 34♂♂7♀♀ 28 May 1974,

(V9890), 3♂♂ 29 May & drift net ♂♀ 20-21 June 1973, JPOC; **R. Laune** (V8991), exiting L. Leane, ♀ 5 September 1972, JPOC; **Torc stream** (V9684), ♀ 29 May 1974, JPOC. **KILDARE: R. Greese** (S7488), Kilkea, adult 21 June 1947, JRH (as *Agapetus comatus*); **R. Liffey** (N9229), Straffan, adult 28 August 1947, JRH (as *Agapetus comatus*). **KILKENNY: R. Nore** (S4472), larvae 16 August 2004, PS, (S4372), larvae 16 August 2004, PS, (S4470), Ballyragget, larvae 16 August 2004, PS. **LAOIS: R. Nore** (S4276), Tallyho Bridge, larvae 16 August 2004, PS. **LEITRIM: Bonet R.** (G8030), ♂ 6 August 1989, JPOC. **LIMERICK: R. Camogue** (R5239), Croom, adult 2 September 1948, JRH (as *Agapetus comatus*); **R. Maigue** (R5140), Croom, adult 2 September 1948, JRH (as *Agapetus comatus*). **MAYO: Robe R.** (M1964), Ballinrobe, ♂ 19 May 1973, JPOC. **MEATH: R. Blackwater** (N7739), Enfield, adult 14 June 1947, (N7245), Longwood, adult 15 August 1947, (N8668), Navan, adult 23 May 1947, all JRH (as *Agapetus comatus*); **R. Dee** (N8286), Nobber, adult 18 May 1947, JRH (as *Agapetus comatus*). **OFFALY: Little Brosna** (N6050), Birr, 3♀♀ 8 September 1978, JPOC; **R. Brosna**, **Silver R.**, Ferbane (N1124)-Tullamore (N3124), adult 5 September 1947, JRH (as *Agapetus comatus*); **R. Monagh** (N5937) [Yellow R.], Castlejordan, adult 8 May 1948, JRH (as *Agapetus comatus*). **SLIGO: Glencar L.** (G7343), river out of, ♂♂♀♀ 28 August 1992, JPOC. **TIPPERARY: Cahir** (Ballybrado House) (R0620), ♂♀♀ 14 July 1986, KGMB, det. JPOC (NMI); **Kilmastulla R.** (R9173), larvae 1976-1977, MAOC; **R. Suir** (S0424), Cahir, ♂♂♀♀ 3 August 1986, CM/OSF (SINMNH), (S0522), Swiss Cottage, Caher [Cahir], 2♂♂3♀♀ 21 May 1997, JPOC. **WATERFORD: Ballyduff** (W9499) [R. Blackwater], ♀ 23 May 1986, KGMB, det. JPOC; **Lismore Castle** (X0498), ♂ 17 July 1987, JPOC (NMI); **R. Blackwater** (X0498), Lismore, 3♂♂7♀♀ 20 May 1997, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♀ 30 June 1888, [JJFXK], conf. JPOC, Harwood Coll. (BMNH). **WICKLOW: R. Avonmore** (T1989), ♂ 22 May 1973, JPOC; **R. Slaney** (S8892), LT 12♂♂6♀♀ 24-25 July 1973, JPOC.

6. *Glossosoma boltoni* Curtis, 1834

Glossosoma boltoni is widely distributed in Ireland. The larvae occur in flowing waters ranging from streams to rivers but require a stony substratum. In Lough Leane, County Kerry, small numbers occurred on exposed rocky shores. They build somewhat loose cases of small pebbles (Fig. 31) and graze on algae and diatoms on the upper surfaces of rocks. The species is widespread in Europe but there are no records from Finland, Norway and Sweden.

Flight period: (March) April–October (1 April–26 October). Michael Kennedy found adults in March but gives no date.

Counties and 10km squares: Carlow, Cavan, Clare, Cork, Derry, Donegal, Dublin, Galway, Kerry, Kildare, Kilkenny, Leitrim, Mayo, Meath, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wickow (21/32). The species is known from ninety-eight 10km squares (98/1019).

FIGURES 29-30. Known Irish and European distributions of *Glossosoma boltoni*.

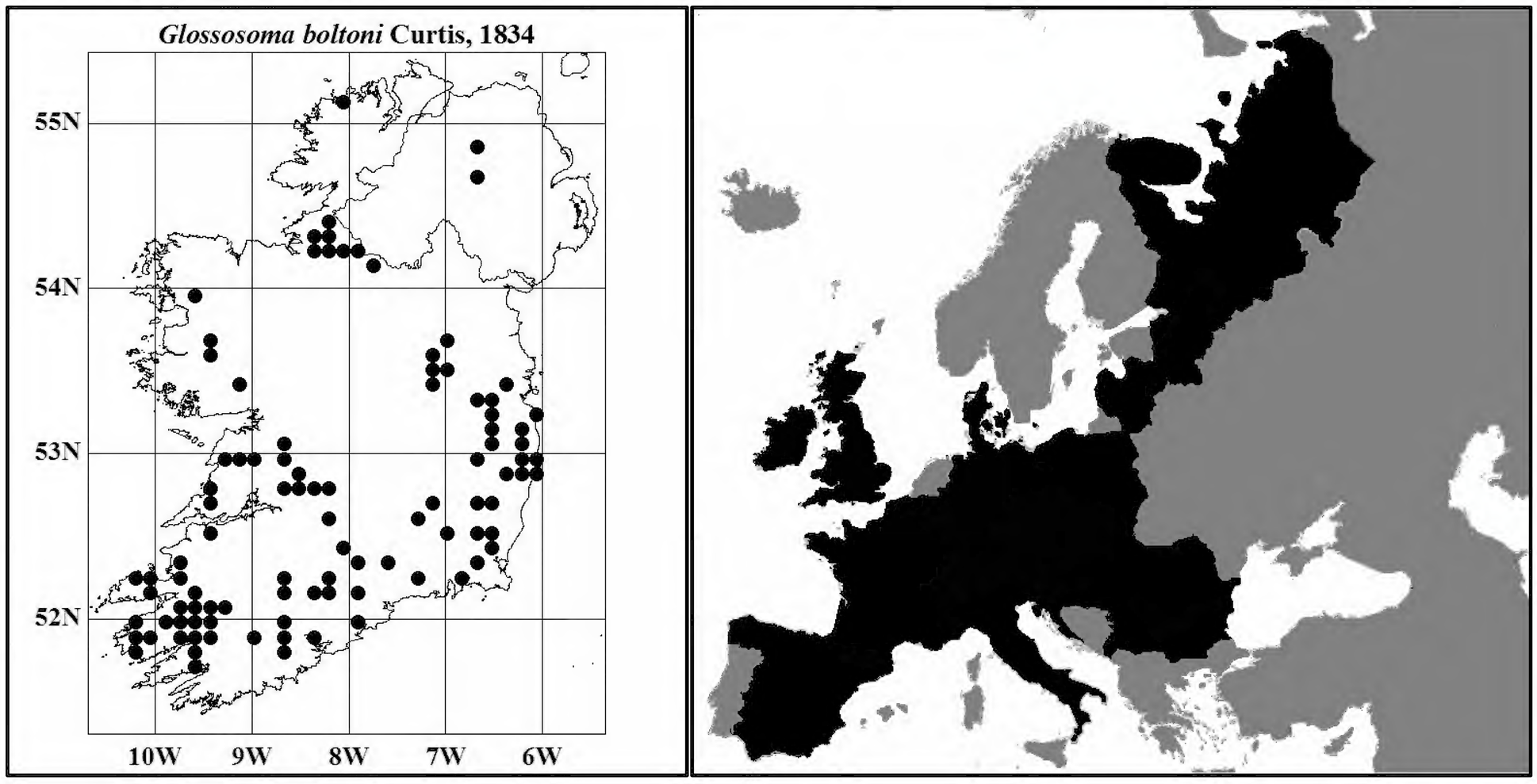
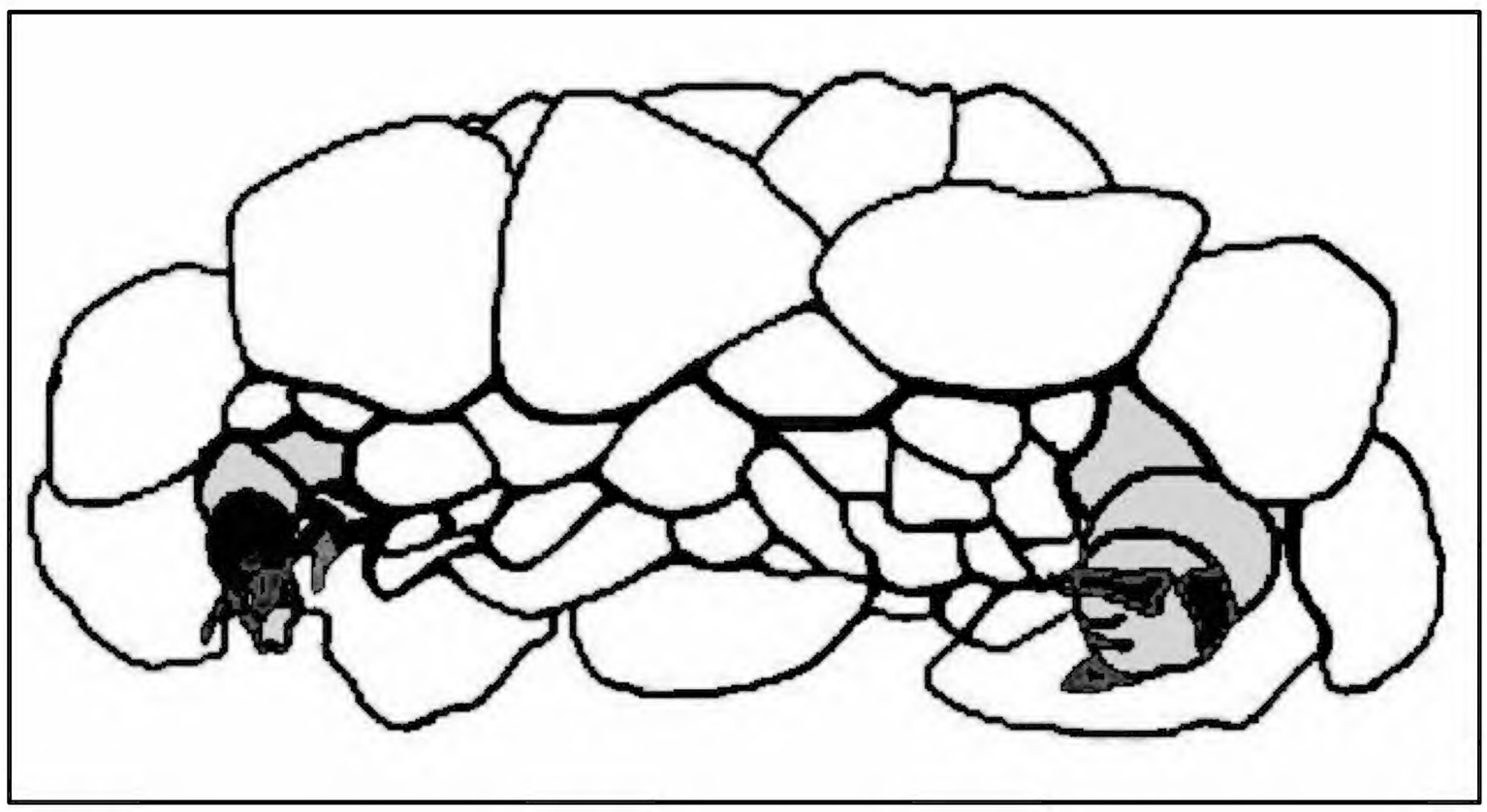


FIGURE 31. Lateral-ventral view of the larva of *Glossosoma boltoni* (after Bouchard, 2004).



Published records

King, 1888a as *Glossosoma vernale* (**DUBLIN:** Lucan (O0335) [R. Liffey]. **KERRY:** Denough [Deenagh] (V9792) and Flesk (V9689) Rivers; Ross Cascade (V9488); The Glen in Deer Park (V9792); Torc Cascade (V9684)). *Halbert, 1908* as *Glossosoma vernale* (**DUBLIN:** Lucan (O0335)). *King and Halbert, 1910* as *Glossosoma vernale* (**KERRY:** Flesk (V9689) and Deenagh (V9792) Rivers; Ross Castle (V9488); the Glen in Deer Park (V9792); near Kenmare (V9471); Torc Cascade (V9684). **WATERFORD:** Cappoquin (X0999); Glenshelane (S1203)). *Frost, 1939* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Frost and Went, 1940* (**KILDARE:** Straffan (N9229)). *Frost, 1942* as *Glossosoma vernale* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Kimmins, 1965* (**IRELAND:** southern). *Toner and O'Connell, 1971*

(**CORK:** Fermoy (R. Blackwater) (W8098); Mallow (R. Blackwater) (W5598); Mitchelstown (R. Funcheon) (R8113). **KERRY:** Rathmore (R. Blackwater) (W1693)). *Fahy, 1972a* (**KERRY:** (V9791) [Killarney]. **KILKENNY:** (S6056) [corrected from S6155]. **MAYO:** (F9505). **TIPPERARY:** (R9930), (S2423)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Fahy, 1972c* (**MAYO:** Altahoney R. (F9605)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480), (V7281), (V7182)). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9191), (V9290); Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Bracken, Norton and Phillips, 1991* (**TIPPERARY:** Kilmastulla R.). *Tierney, Kelly-Quinn and Bracken, 1998* (**WICKLOW:** no sites given for the species). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Kelly et al., 2003* (**TYRONE:** R. Lissan (H8280)). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** widespread and common). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune, the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 28 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *de Eyto, 2011* as *Glossosoma boltani* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**GALWAY:** L. Corrib (M2541). **MAYO:** L. Mask (M1060) *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); Doolough (V9585); Inch Strand (Q6400); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Flesk (V9789); R. Galey (R0139); R. Inny (V5572)). *Anon., 2015a* (**CORK:** Glengarriff Nature Reserve (V9157). **KERRY:** Killarney National Park (V9490)).

Unpublished records and voucher specimens

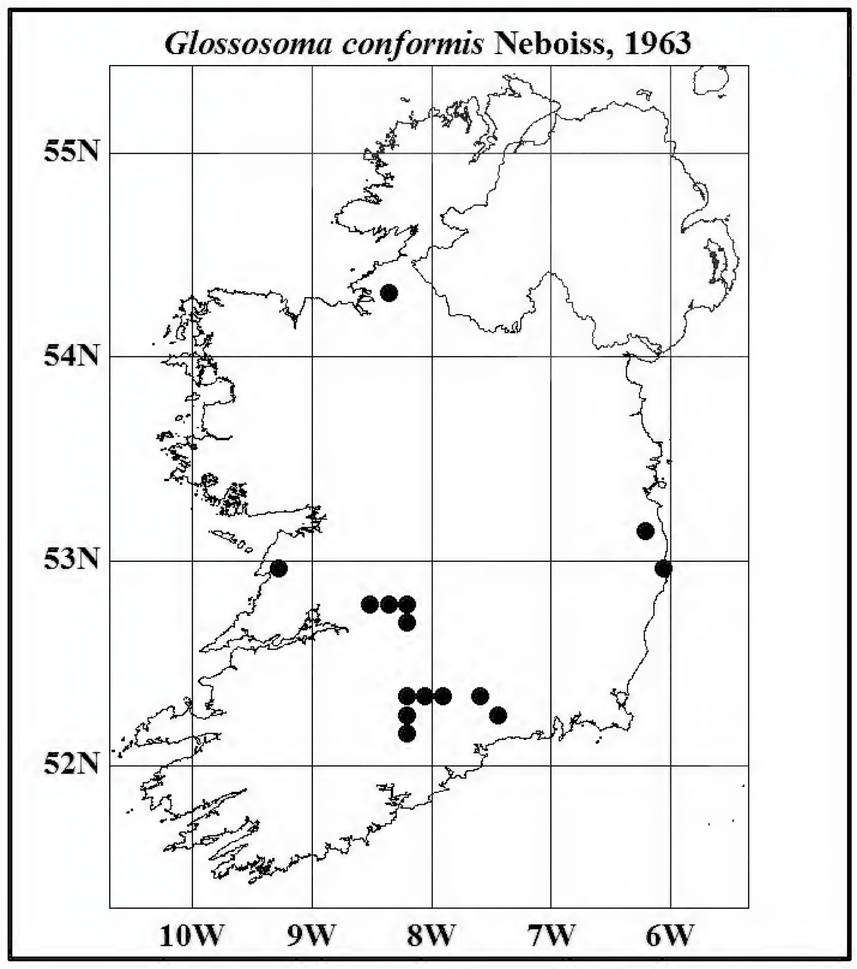
CARLOW: R. Slaney (S9161), Clonegal, adult 31 August 1946, JRH; **St Mullins** (S7238), stream, larva 5 July 2014, MAOC/JPOC, det. JPOC. **CAVAN: R. Owenmore** (H0626), 2 larvae & ♀ 3 August 1973, JPOC; **R. Swanlibar** (H1524), larva & ♀ pupa 3 August 1973, JPOC; **waterfall/stream** (H0127), larva, 3 August 1973, JPOC. **CLARE: Ardcloony R.** (R6770), 8 larvae, ♂2♀♀ pupae & 2♂♂2♀♀ 3 September 1973, JPOC; **L. Derg** (R6979), LT 2♂♂6♀♀ 2-3 September 1973, JPOC; **L. Inchiquin** (R2789), ♂ 4-6 June 1972, JPOC; **Moyree R.** (R3689), 3 larvae 1 July 1973, JPOC; **R. Annageeragh** (R0371), ♀ 9 July 1973, JPOC; **R. Bleach** (R5795), 3♀♀ 13 July 1973, (R6096), LT ♂3♀♀ 3-4 September 1973, JPOC; **R. Creegh** (Q9966), ♀ 29 August 1973, JPOC; **R. Denlagh** (R1191), 2 larvae & ♂♀ pupae 30 August 1973, JPOC; **R. Ennistymon** (Inagh R.) (R1288), ♂ 10 July 1981, LT ♂ 15 July 1981, JPOC; **R. Fergus** (R2591), 2 larvae 1 September 1973, JPOC; **R. Gournar** (R5166), larva & 2♀♀ 12 July 1973, JPOC; **R. Mountrice** (R5866), 3 larvae 2 September 1973, JPOC; **stream** (R2592), larva 10 July 1973, JPOC. **CORK: Fota Wildlife Park** (W7871), ♂ 8 July 1986, KGMB, det. JPOC; **Gearagh** (W3371),

Annahala Bridge, ♂ 30 April 1985, LT 4♀♀ May 1989, KGMB, det. JPOC; **Glengarriff** (V9256), adult July 1947, BPB, det. JRH; **Inishannon** (W5257) [R. Bandon], ♀ 30 April 1985, KGMB; **Kilcoman [Bog]** (R5811), MVLT ♂ 12 June 1992, KGMB, det. JPOC; **R. Araglin Catchment** (R8702), larvae, NS & PSG; **R. Lee** (W5671), adults March-September, MK; **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI); **Tourig R.** (X0280), Inch, ♂ 16 May 1985, KGMB, det. JPOC. **DERRY: Drumnaph Community Nature Reserve** (C8303), Grillagh R. near Maghera, bucket trap ♂♀ 5 September 2014, KGMB, det. JPOC. **DONEGAL: Ray R.** (B9530), Falcarragh, 2♂♂ 21 August 1987, TMN, det. JPOC (NMI). **DUBLIN: Lucan** (O0335), ♂♀ 29 August 1888, JJFXK (NMS); **R. Liffey** (O0235), Lucan Demesne, ♀ 18 September 1973, JPOC; **R. Tolka** (O0640), Mulhuddart, LT 2♂♂♀ 11 June 1973, JPOC. **KERRY: Killarney**, ♂♂♀♀ 25 June & 29 June, 14 July, 2a August & 8a August 1887, JJFXK (NMS), ♂♀ 27 June, 3♂♂ 5 July, ♂ 8 July & ♂ 18a July 1887, JJFX, conf. JPOC (NMI), adult 1940, BPB, det. JRH; **Muckross Lake** (V9485), ♀ LT 11-12 October 1972, JPOC (NMI); **Owenascaul R.** (Q5901), 9 larvae, 2♂♂ pupae & 4♀♀ 28 August 1973, JPOC; **Owencashla R.** (Q6208), 2♂♂2♀♀ pupae & 11♂♂3♀♀ 28 August 1973, JPOC; **R. Annaschull** (Q5901), ♂♂♀♀ 17 October 1973, JPOC; **R. Blackwater** (V7972), Derrendarragh, ♀ 4 August 1986, CM/OSF (SINMNH); **R. Brick** (stream) (Q8523), larva, ♂2♀♀ pupae & ♂♀ 28 August 1973, JPOC; **R. Deenagh** (V9590), Kenmare Estate, 6♂♂ 8 September 1981, JPOC; **R. Ferta** (V5282), larva, ♂ pupa & ♂4♀♀ 6 July, ♂ pupa & ♂♀ 26 August 1973, JPOC; **R. Finnihy** (V9072), larva, 2♂♂2♀♀ pupae & 3♀♀ 26 August 1973, JPOC; **R. Flesk**, adult 20 October 1946, JRH, (V9789), 4♂♂4♀♀ 5 September 1972, 4♂♂3♀♀ 3 July 1973 (NMI), (W0387), 2♂♂4♀♀ 5 September 1972, JPOC, 2 larvae January 1972, EJW, (W0185), ♂3♀♀ 10 October 1972, (V9689), ♀ pupa May, 3♂♂2♀♀ pupae September & ♂18♀♀ 5 September 1972, ♀ 14 October 1973 (NMI), JPOC, (V9890), LT 4♂♂4♀♀ 27 July 1977, MFOG; **R. Gaddagh** (V8391), 6 larvae, ♀ pupa & 7♂♂6♀♀ 24 August 1973 (NMI), 8♂♂4♀♀ 13 October 1973, JPOC; **R. Galey** (R0438), ♂ 8 July 1973, JPOC; **R. Glenahoo** (Q5410), 3 larva, ♂ pupa & 7♂♂7♀♀ 7 July, 2♂♂2♀♀ 28 August & 5♂♂3♀♀ 17 October 1973, JPOC; **R. Inny** (V5673), 3♀♀ 26 August 1973, JPOC; **R. Owenschull** (Q5901), larva & 3♂♂3♀♀ 7 July 1973, JPOC; **R. Roughty** [Owbeg R.] (V9873), Ardtully, 7 larvae, 3♂♂ pupae & 4♂♂♀ 26 August & 4♂♂10♀♀ 19 October 1973, JPOC; **Roughty R.** (V9673), stream entering, 3 larvae & 2♂♂ 4 July 1973, JPOC; **stream** (V4872), 3♂♂♀ 26 August 1973, JPOC; **stream** (V6986), near L. Caragh, larva, ♀ pupa & 3♂♂6♀♀ 27 August 1973, JPOC; **stream** (Q8905), entering R. Maine, 4 larvae 7 July 1973, JPOC; **Torc stream** (V9684), beside Muckross Lake, ♀ 24 August & 4♂♂4♀♀ 26 August 1973, 2 larvae & 3♂♂4♀♀ 28-29 May 1974, JPOC. **KILDARE: R. Liffey** (N9732), St Wolstans, Celbridge, adult 12 April 1947, JRH. **KILKENNY: R. Nore** (S5055), Kilkenny, ♀ 29 July 1987, BMOH, det. JPOC (NMI). **LEITRIM: Bonet R.** (G8444), larvae 18 July 1989 & 25 June 1991, (G8534), larvae 26 March & 24 June 1991,

(G8231), larvae 25 March & 24 June 1991, (G8446), larvae 18 July 1989 & 25 June 1991, (G8642), larvae 18 July 1989, (G8741), larvae 18 July 1989, 26 March & 25 June 1991, (G8738), larvae 26 March & 24 June 1991, (G8637), larvae 25 March 1991, (G8535), larvae 25 March & 24 June 1991, DAG/JML, det. JML; **Glencar Waterfall** (G7543), ♂♀ 25 August 1992, JPOC; **Owenmore R.** (G9137), larvae 18 July 1989, 26 March & 24 June 1991, (G8839), larvae 18 July 1989 & 26 March 1991, DAG/JML, det. JML. **MAYO: R. Glensaul** (M0968), larva 27 August 1980, LW, conf. JPOC (NMI). **MEATH: Trimblestown R.** (N6967), larvae June 1989, DAG/JML, det. JML. **SLIGO: Glencar L.** (G7343), river out of, ♂ 28 August 1992, JPOC; **L. Gill** (G7234), larvae 20 July 1989, DAG/JML, det. JML. **TIPPERARY: Ballina**, (R7072), larva Easter 1986, JPOC; **Glenpaudeen** (R9150) [near R. Muiteen], ♀ 14 June 1985, KGMB; **Kilmastulla R.** (R8172), (R7269), (R7169), (R6867), (R9173), larvae 1976-1977, MAOC; **R. Suir** (S0424), Cahir, ♂♂♀♀ 3 August 1986, CM/OSF (SINMNH). **WATERFORD: Cappoquin** (X0999), ♀ 25 July & 2♀♀ August 1902, JJFXK, conf. JPOC (NMI), ♂, conf. JPOC (NMI); **Lismore** (X0498), ♀ July 1894, GHC, conf. JPOC (NMI); **Portlaw Estate** (S4415), ♂ 16 July 1987 (NMI), ♂♀ 1 April 1991, JPOC (NMI). **WESTMEATH: Mongag R.** (N5938), larvae June 1989, DAG/JML, det. JML; **R. Deel** (N5565), larvae September 1989, (N5854), larvae September 1989, (N6949), larvae September 1989 & April 1990, DAG/JML, det. JML. **WEXFORD: Corock R.** (S8921), ♂ pupa 20 July 2015, JPOC/MAOC, det. JPOC; **R. Boro** (S9636), Soldiers Hole, 5♂♂♀ 23 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9739), Enniscorthy, 6♂♂5♀♀ 27 July 2015 (NMI), (S9738), ♂♀ 28 July 2015, all JPOC/MAOC, det. JPOC. **R. Urrin** (S8943), bridge near Mangan, 2 larvae, ♂ pupa & ♂ 3 July 2014, JPOC/MAOC, det. JPOC; **Tintern Abbey** (S7910), river, ♀♀ 15 June 1990, JPOC. **WICKLOW: Avondale** (T1986) [R. Avoca], ♂ 27 May 1988, JPOC; **Brittas R.** (O0218), larva 18 August 1973, JPOC; **Browns Beck Brook** (Carrigower R.) (S9194), ♂ 23 July & ♂ 20 September 1973; **Dargle R.** (O2216), 6♂♂3♀♀ 16 August 1972, JPOC; **King's R.** (O0401), LT ♂ 22-23 July 1973, JPOC; **Potters R.** (T2985), 3♂♂ 19 September 1973, JPOC; **R. Annamoe** (T1799), ♀ 19 August 1973, JPOC; **R. Avonmore** (T1989), ♂ 22 May 1973, JPOC; **R. Bray** (O2518), 6♂♂10♀♀ 14 August 1972, JPOC; **R. Derry** (S9764), 2 larvae, ♂♀ pupae & 2♂♂4♀♀ 20 September 1973, JPOC; **R. Glencree** (O2014), ♀ 19 August 1973, JPOC; **R. Ow** (T0981), ♂♀ pupae 28 July 1973, JPOC; **R. Slaney** (S8892), LT 4♂♂31♀♀ 24-25 July 1973, (S8689), 3♂♂ 20 September 1973, JPOC; **stream** (S8695), larva 20 September 1973, JPOC; **Three Mile Water** (T3287), 3 larvae, 3♂♂♀ pupae & ♀ 19 September 1973, JPOC; **Vartry R.** (T2797), 5♀♀ 20 July 1973, JPOC; **waterfall/stream** (N9911), lake drive near Lacken, larva 22 July 1973, JPOC.

7. *Glossosoma conformis* Neboiss, 1963

FIGURES 32-33. Known Irish and European distributions of *Glossosoma conformis*.



Glossosoma conformis is a rarer species than *G. boltoni* and is only known from seven Irish counties. The larvae occur in flowing waters ranging from streams to rivers but require a stony substratum. They build somewhat loose cases of small pebbles and graze on algae and diatoms on the upper surfaces of rocks. In the Glenfinnish River, County Cork, five larval instars were identified. The majority of individuals overwintered in instars II or III. Development was rapid in the spring (Sangpradub, Giller and O'Connor, 1999). Because of the confusion between *Glossosoma boltoni* Curtis (= *vernale* Pictet) and *G. conformis* (= *boltoni* auct. nec Curtis) in the literature, and the lack of any verifiable voucher specimens, the Irish record in Hickin (1967) is not accepted. Indeed, Hickin's record of south Ireland is given as *G. boltoni* in Kimmins (1965). The first authentic record is that of O'Connor (1978) from County Wicklow. The species is widespread in Europe. It is doubtfully known from the Iberian Peninsula.

Flight period: May–August (21 May–25 August).

Counties and 10km squares: Clare, Cork, Leitrim, Mayo, Tipperary, Waterford, Wicklow (7/32). The species is known from fifteen 10km squares (15/1019).

Published records

[*Hickin, 1967* (SOUTH IRELAND: D.E.K [D. E. Kimmins). This record is not accepted as it is is given as *Glossosoma boltoni* in Kimmins (1965).]. *O'Connor, 1978a* (**WICKLOW:** [Vartry R.]). *O'Connor, 1987* (**WICKLOW**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Bracken, Norton and Phillips, 1991* **(TIPPERARY:** Kilmastulla R.). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Ryder et al., 2011* (**MAYO:** Owengarve (F9101)). *O'Connor and Nelson,*

2012 (**WICKLOW**). *Barnard and Ross, 2012* (**IRELAND**). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8467), (R8667), (R8168); R. Tar (R9419), (R9019), (R8919), (R9117), (R9416)).

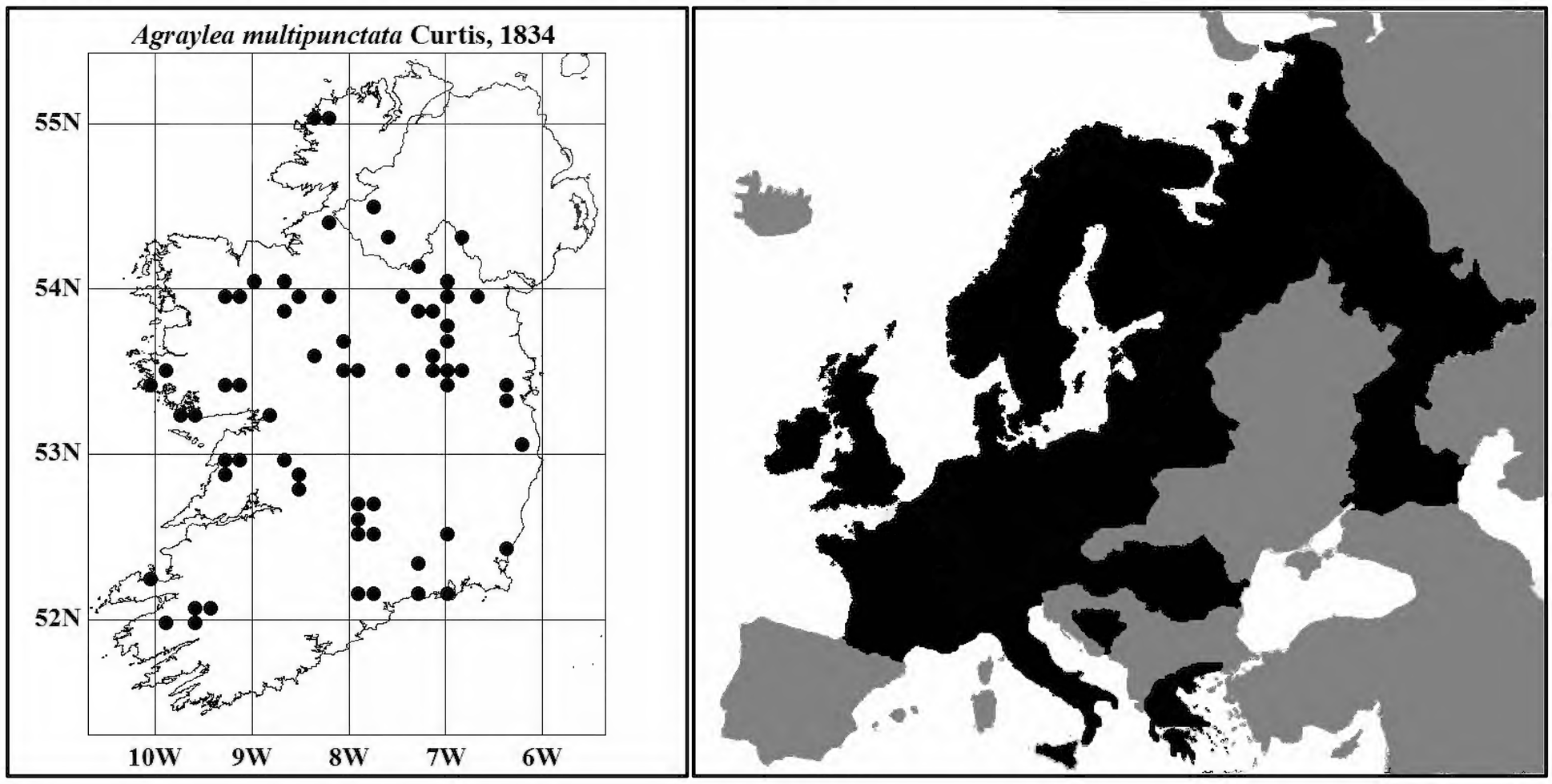
Unpublished records and voucher specimens

CLARE: R. Ennistymon (Inagh R.) (R1288), LT ♂ 15 July 1981, JPOC. **CORK: Araglin R.** (R8703), near Fermoy, 2♂♂ pupae 25 May 1989, NS, conf. JPOC (NMI). **LEITRIM: Glencar** (G7543), ♂ 25 August 1992, beside the waterfall, JPOC (NMI). **TIPPERARY: Kilmastulla R.** (R6867), larvae/adults 1976-1977, MAOC; **R. Suir** (S0522), Swiss Cottage, Caher [Cahir], ♀ 21 May 1997, JPOC. **WATERFORD: Coumshingaun** (S3411) [tributary of R. Clodiagh], ♂ 17 June 1985, KGMB; **Glasha R.** (S3022), ♂ 8 July 1989 & ♂ 27 May 1997, JPOC/MAOC, det. JPOC, ♂♀♀ 18 July 1989, JPOC. **WICKLOW: Knocksink Woods** (O2117), MT by tufa streams beside woodland, 2♀♀ 23-26 June 1995, CR, det. JPOC; **Vartry R.** (T2797), 3♂♂♀ 13 June 1973, JPOC (NMI).

HYDROPTILIDAE

8. *Agraylea multipunctata* Curtis, 1834

FIGURES 34-35. Known Irish and European distributions of *Agraylea multipunctata*.



Agraylea multipunctata is widely distributed in Ireland. The larvae feed on filamentous algae and occur in canals, lakes, ponds and slow flowing sections of rivers. Only the final larval instar has a case. Both species of *Agraylea* have beautiful purse-shaped cases made of secretion usually with incorporated algal filaments. The larvae occur in great numbers in the littoral area of Lough Leane in County Kerry where they are heavily predated by brown trout. The species is widespread in Europe but has not been found on the Iberian Peninsula.

Flight period: April–October (21 April–17 October).

Counties and 10km squares: Carlow, Cavan, Clare, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Leitrim, Longford, Mayo, Meath, Monaghan, Roscommon, Sligo, Tipperary, Waterford, Westmeath, Wexford, Wicklow (21/32). The species is known from sixty-five 10km squares (65/1019).

Published records

King, 1888a (**KERRY:** Dinish (V9385); Ross Castle (V9488). **WESTMEATH:** Coosan Point (N0446) [L. Ree]). *Morton, 1892b* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* (**KERRY:** Dinish (V9385); Ross Castle (V9488). **MONAGHAN:** Glaslough (H7241). **WATERFORD:** Cappagh L. (X1996). **WESTMEATH:** Coosan Point (N0446) [L. Ree]). *Partridge and Foy, 1972* (unsafe larval determination). *Speight, 1977* (**WESTMEATH:** Coosan Lake [should be Coosan Point (N0446)]). *Marshall, 1978b* ((H7-0-) = [H7007], (H7-4-) = [H7241], (N0-4-) = [N0146], (R2-8-) = [R2789], (V9-8-) = [V9686], (V9-9-) = [V9291], (X1-9-) = [X1198]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7007). **WICKLOW:** L. Dan (O1502)). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9191), (V9290), (V9490), (V9788) (V9686); Muckross Lake (V9685); Upper Lake [Killarney]). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 1 out of 70 sampled sites). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9689); R. Laune (V8991)). *Becerra Jurado et al., 2009* (**TIPPERARY:** ponds (S0540), (S1640). **WATERFORD:** ponds (S4623), (S5202). **WEXFORD:** pond (T0830)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**DONEGAL:** L. Anure (B8216); L. Nacung Upper (B8920); L. Keel [Red Water L.] (B8416). **GALWAY**: Ballynahinch Lake (L7648); L. Anaserd (L6044); L. Hibbert (L8822); L. Nagravin (L9921). **KERRY:** Cloon L. (V7077). **MAYO:** Derryhick L. (M2099); L. Cullin (G2303). **ROSCOMMON:** Cloonagh L. (M5487). **SLIGO:** Cloonacleigha L. (G6115)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686); Muckross Lake (V9685); Upper Lake (V9383); R. Flesk (V9789)). *O'Connor and Davy-Bowker, 2014* (**FERMANAGH:** R. Finn (H4220)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** R. Erne (H2637); Upper L. Erne (H2244)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Lower L. Erne (H1758)).

Unpublished records and voucher specimens

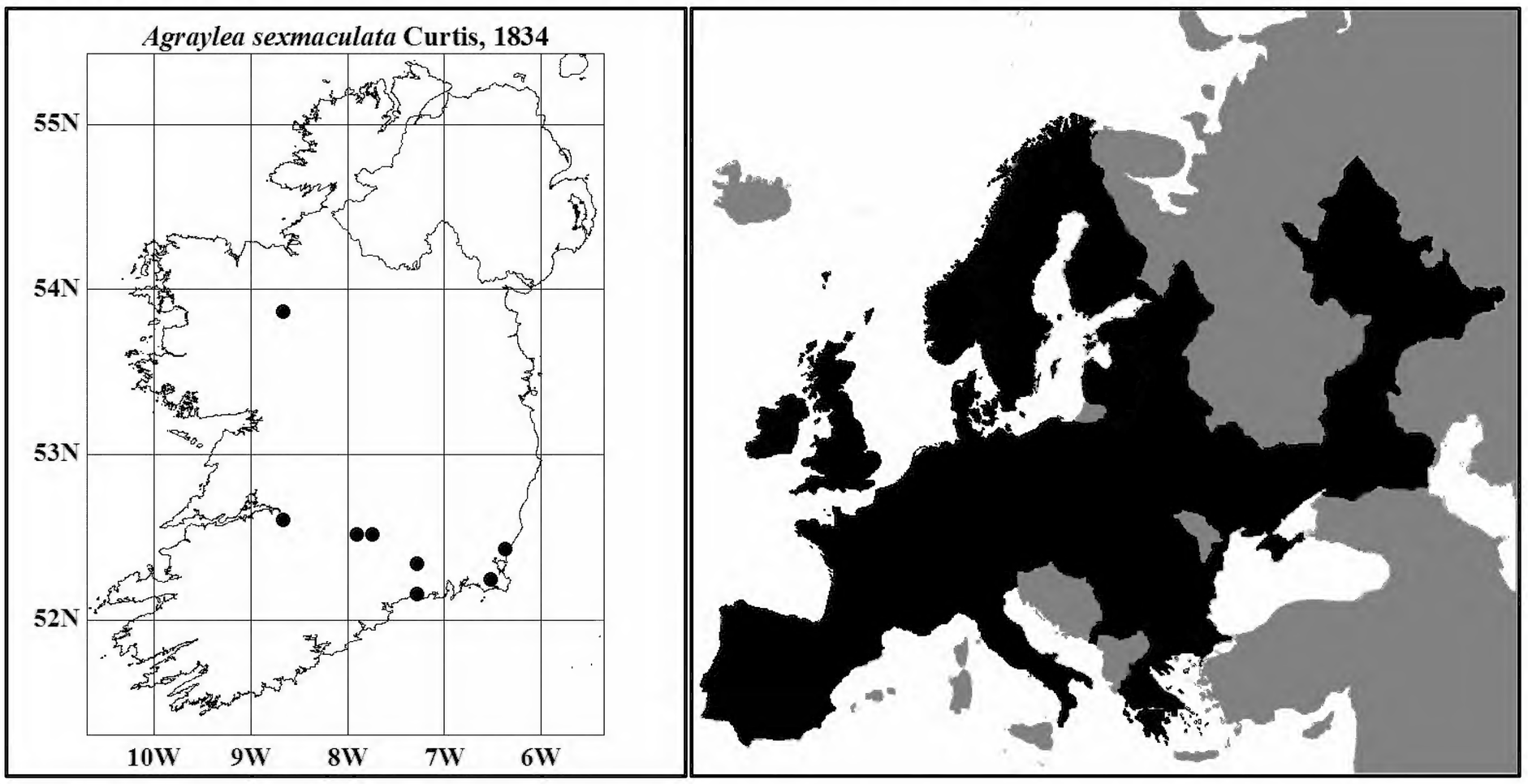
CARLOW: R. Barrow (S7238), lockhouse, ♂ 22 July 2015, JPOC/MAOC, det. JPOC, (S7043), Tinnahinch, dead inside a light-fitting on a bridge, ♂ 21 August 1996, JPOC. **CAVAN: Corrakane L.** (H4000), small lake, ♂ 3 August 1981, JPOC/MAOC, det. JPOC; **L. Mullagh** (N6785), 3♂♂♀ 10 July 1969, ♂ 10 August 1972, JPOC, larvae 1996/1997, JW; **L. Ramor** (N5987), ♂ 10 August 1972, JPOC; **L.**

Sheelin (N4686), Crover, ♂♂ 6 August 1990, JPOC, IET 12♀♀ 31 August 1971, IFT, det. JPOC; **L. Sillan** (H7007), light ♂ 27 July 1972, (H6906), larva May 1971, 2♂♂ 27 July, 32♂♂8♀♀ 30 & light 9♂♂2♀♀ 30 August 1972, 11♂♂♀ 20 May 1974, JPOC. **CLARE: Lickeen Lake** (R1891), 7♂♂♀ 10 July 1973, JPOC; **L. Derg** (R6979), LT 2♂♂ 2-3 September 1973, JPOC; **L. Graney** (R5691), ♂ 3 September 1973, JPOC, larvae 1996/1997, JW; **L. Inchiquin** (R2789), 4♂♂3♀♀ 10 July 1973, LT ♀ 31 August-1 September 1973, JPOC, larvae 1996/1997, JW; **L. Mooghna** (R1384), ♂ 9 July 1973, JPOC; **R. Shannon** (R7072), Killaloe, 6♂♂ 6 August 1986, CM/OSF (SINMNH). **DUBLIN: Royal Canal** (O0838), The Twelfth Lock, ♂ 28 August 2014, JPOC; **Zoological Gardens** (O1235), pond, ♂ 21 July 1991, JPOC. **GALWAY: Connemara National Park** (L7157), Letterfrack, 2♂♂ 23 July 1982, JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 19 September 1983, PB, det. JPOC; **Hollygrove Lake** [Ballaghdacker L.] (M7857), 2♂♂ 8 August 2001, JPOC; **L. Corrib** (M2341), Middle, ♀ 7 July 1980, BC, det. JPOC (NMI), (M1146), Upper, ♀ 27 June 1980, BC, det. JPOC (NMI). **KERRY: Doolough** (V9586), MT ♀ 26-29 April 2005, CR; **Killarney**, adults 27a June & 28 June, 11 July & 31 July 1887, [JJFXK], (BMNH), ♂ 26 June & 3♂♂♀ 12 July 1887, JJFXK, conf. JPOC (NMI), adults 23a June, 26 June, 28 June & 30 June 1887, 11 July & 19 July 1887, JJFXK (NMS), ♂♂ August, JJFXK, Morton Collection (NMS); **L. Gill** (Q6114), 80♂♂2♀♀ 28 August & ♀ 17 October 1973, JPOC; **L. Leane** (V9291), Golf Course, ♂ 21 April & 10♂♂2♀♀ 24 August 1973, 7♂♂ 29 May 1974, 2♂♂ 15 September 1981, ♂♂ 26 August 1987, ♂♂ 1 June 1995, (V9188), mountain shore, 5♂♂ 27 August 1987, (V9686), boat house, 6♂♂3♀♀ 5 September 1972 (NMI), 10♂♂5♀♀ 23 August 1973, 5♂♂3♀♀ 28 May 1974, (V9291), Hotel Europe, 2♂♂ 5 September 1972, (V9590), Kenmare Estate, 13♂♂5♀♀ 5 September 1972, (V9488), Ross Castle, ♀ 13 October 1973, 3♂♂♀ 29 May 1974, JPOC, (V9686), Castlelough Bay, IETS 5♂♂ 25 August & 11♂♂ 1 September 1972, UCD, det. JPOC, trout stomachs, 2257 larvae & ♂ pupa, det. JPOC, ♀ pupa exposed rocky shore, 10 April, 4 larvae reed bed & larva sheltered rocky shore, 13 April 1973, JPOC; **Muckross Lake** (V9685), Dundag Bay, ♂ 25 August 1972, IETS 8♂♂ 1 October 1972, JPOC (NMI) & 13♂♂ 7 September, 13♂♂ 1 October 1972, 4♂♂ 3 June, ♀ 30 July, 3♀♀ 19 August 1973, UCD, det. JPOC, (V9485), Colleen Bawn (Baun), ♀ 28 July 1973, JPOC; **R. Flesk** (V9689), ♂ 14 October 1973, JPOC; **Upper Lake, Killarney** (V9282), 9 larvae 13 April 1973, JPOC. **KILDARE: R. Boyne** (N6643), larvae May 1990, DAG/JML, det. JML. **LEITRIM: Bonet R.** (G8446), larvae 25 June 1991, DAG/JML, det. JML. **LONGFORD: L. Ree** (N0069), Lanesborough, ♀ 14 August 2001, JPOC. **MEATH: R. Boyne** (N7149), larvae July 1991, (N7352), larvae July 1991, DAG/JML, det. JML; **Trimblestown R.** (N6967), larvae June 1989 & April 1990, DAG/JML, det. JML. **MONAGHAN: Glasslough** (H7241), ♂ August 1892, conf. JPOC, Morton Coll. (NMS), ♂♀ 12 August 1973, JPOC; **Nuremore** (H8502), pond, ♂ 28 April 2011, JPOC. **ROSCOMMON: L. Key** (G8404), Rockingham, 6♂♂ 11 August 2001,

JPOC. **SLIGO: L. Gara South** (M6997), larva 1996/1997, JW; **L. Talt** (G3915), larvae 1996/1997, JW. **TIPPERARY: R. Drish** (S1759), larvae 6 July 1992, DAG/JML, det. JML; **R. Suir** (S1258), larvae 22 May 1992, (S1255), larvae 19 September 1991, 10 March & 22 May 1992, DAG/JML, det. JML. **WATERFORD: Ballin L.** (S4503), near Kill, ♀ 5 July 1988, JPOC; **Ballyscanlan L.** (S5403), 2♂♂ 8 July 2014, JPOC/MAOC, det. JPOC; **Belle Lake** (S6605), ♂♀ 5 July 1990, JPOC; **Cappoquin** (X0999), ♂ 5 August 1902, JJFXK, conf. JPOC (NMI). **WESTMEATH: L. Ennell** (N4147), ♂ 15 May 1973, JPOC; **R. Deel** (N5565), larvae April 1990, (N5854), larvae April 1990, (N6949), larvae September 1989, DAG/JML, det. JML. **WICKLOW: L. Dan** (O1502), ♀ 4 August 1972, JPOC.

9. *Agraylea sexmaculata* Curtis, 1834

FIGURES 36-37. Irish and European distributions of *Agraylea sexmaculata*.



Agraylea sexmaculata is a very rare Irish species compared with *A. multipunctata* and is only known from five Irish counties. The larvae feed on filamentous algae and occur in ponds and lakes, both natural and man-made. Only the final larval instar has a case. The species is widespread in Europe.

Flight period: June, August (3–4 June, 4 August). Barnard and Ross (2012) give a British flight period of May–September.

Counties and 10km squares: Limerick, Roscommon, Tipperary, Waterford, Wexford (5/32). The species is known from eight 10km squares (8/1019).

Published records

O'Connor and O'Hanrahan, 1988 (**WEXFORD:** small pond near Bridgetown (S9810)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Sweeney, 2006* (**LIMERICK:** Bunlicky Lake (R5455)). *Becerra Jurado et al., 2009* (**TIPPERARY:** ponds (S0540), (S1640). **WATERFORD:** ponds (S4623), (S5202). **WEXFORD:** pond (T0830)). *O'Connor and Nelson, 2012* (**WEXFORD**). *Barnard*

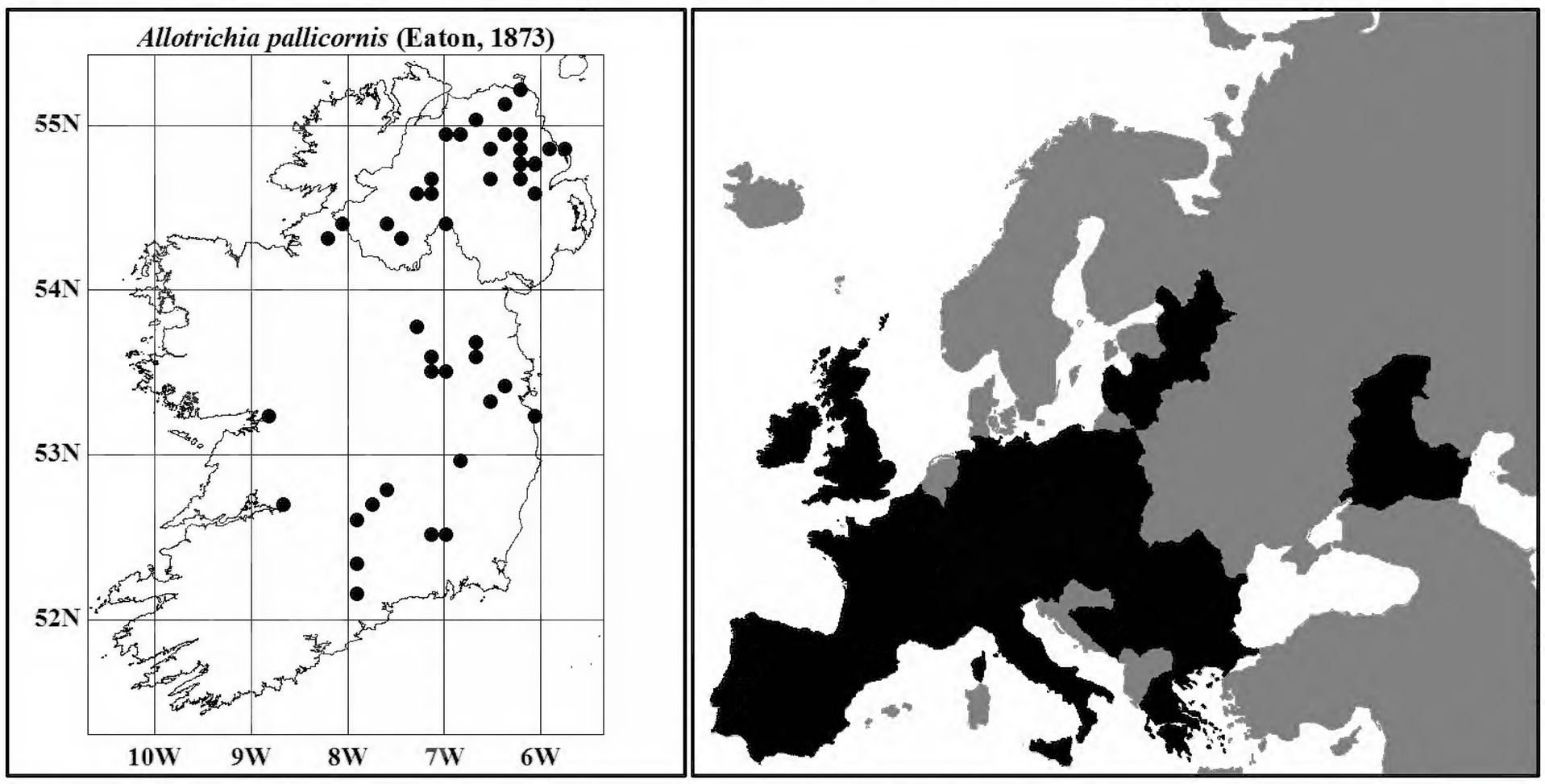
and Ross, 2012 (**IRELAND**). *Little and Free, 2013* (**ROSCOMMON:** Cloonagh L. (M5487)).

Unpublished records and voucher specimens

LIMERICK: Mungnet (R5455), small man-made lake created by flooding of old clay pits, larva 23 June & ♂ pupa 4 August 2000, PS, conf. JPOC (NMI). **WEXFORD: small pond** (S9810), near Bridgetown ♂ 3 June & ♂ 4 June 1987, JPOC (BMNH, NMI).

10. *Allotrichia pallicornis* (Eaton, 1873)

FIGURES 38-39. Irish and European distributions of *Allotrichia pallicornis*.



Allotrichia pallicornis is widely distributed in Ireland. The larvae occur in flowing waters ranging from streams to rivers where they are often associated with the algal felt on stones and boulders. Only the final larval instar has a case which is purse shaped being composed of secretion and loosely attached algal filaments which give it a rough appearance. The species is widespread in Europe but has not been recorded from Scandinavia.

Flight period: May–August (20 May–14 August).

Counties and 10km squares: Antrim, Carlow, Derry, Dublin, Fermanagh, Galway, Kildare, Kilkenny, Leitrim, Limerick, Meath, Tipperary, Tyrone, Waterford, Westmeath, Wicklow (16/32). The species is known from forty-three 10km squares (43/1019).

Published records

O'Connor, 1978a (**DUBLIN**. **WICKLOW**). *Marshall, 1978a* (**IRELAND**). *O'Connor and Bracken, 1980b* (**DUBLIN:** R. Tolka (O1037), Bridge at Abbotstown Gate). *O'Connor, 1987* (**DUBLIN**. **WICKLOW**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Duke, 1994* (**MEATH:** Upper Inny (N5280)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 14 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley*

and Kelly-Quinn, 2005 (**IRELAND:** 19 out of 207 river sites). *O'Connor and Nelson, 2012* (**DUBLIN**. **WICKLOW**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Cashel Burn (D1706); Coopers Water (J2175); Doagh R. (J2693); Doagh R. tributary (J2593); Dunnstown Burn (D0409); Glynn R. (J4099); Legnagooly Burn (D1312); R. Bush (D0729); R. Clady (Clady Water) (J1984), (C9603); R. Glenshesk (D1240); R. Larne (D3700); Ross Burn (J1597); Six Mile Water (J2890). **DERRY (LONDONDERRY):** Cam Burn (C8421); R. Agivey (C7912); R. Ballinderry (H9279); R. Owenbeg (C6809). **FERMANAGH:** Lisnabane Burn (H3744); R. Roogagh (Glen R.) (G9451). **TYRONE:** Ballygawley R. (Ballygawley Water) (H6353); Foxhill Burn (H2752); R. Cloghfin (H5767), (H5170); R. Owenreagh (H5882)).

Unpublished records and voucher specimens

CARLOW: St Mullins (S7237), small river entering R. Barrow, ♀ 1 July 1991, JPOC/MAOC, det. JPOC. **DUBLIN: R. Tolka** (O0640), Mulhuddart, ♂ 10 June & ♂ bred from pupa 14-21 July 1973, LT ♂♂ 10-11 June 1973, JPOC (NMI). **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva 3 May 1984, PB, det. JPOC. **KILDARE: Louisa Bridge** (N9936), small stream in marshy area, 2♂♂♀ 6 June 1991, JPOC; **R. Greese** (S7488), Kilkea, adult 21 June 1947, JRH. **KILKENNY: Glashare Castle** (S3270) [near river], ♀ 14 June 1985, KGMB, conf. JPOC (NMI); **R. Nore** (S6337), Inistioge, 6♂♂6♀♀ 16 June 1991, JPOC. **LEITRIM: Owenmore R.** (G9137), larvae 24 June 1991, (G8839), larvae 18 July 1989, DAG/JML, det. JML. **LIMERICK: R. Shannon** (R5757), St John's Castle, ♂ 5 June 1992, JPOC. **MEATH: R. Boyne** (N8865), ♀ 30 May 1986, JPOC, (N8768), ♂♂ 24 May 1988, MFOG, det. JPOC, (N7149), larvae July 1991, DAG/JML, det. JML; **R. Inny** (N5280), Castlecor Bridge, larva May 1992, M. Duke, conf. JPOC (NMI). **TIPPERARY: Cabragh Bog** (S1054), MVLT ♀ 28 June 1994, KGMB, det. JPOC (NMI); **R. Suir** (S1362), larvae 10 March 1992, DAG/JML, det. JML, (S0522), Swiss Cottage, Caher [Cahir], ♀ 21 May 1997, JPOC. **WATERFORD: R. Blackwater** (X0498), Lismore, ♂♂♀♀ 20 May 1997, JPOC. **WESTMEATH: R. Deel** (N5565), larvae April 1990, (N5854), larvae April 1990, (N5954), larvae April 1990, DAG/JML, det. JML. **WICKLOW: R. Bray** (O2518), ♂♂♀ 14 August 1972, JPOC, conf. A. P. Nimmo (NMI).

11. *Hydroptila angulata* Mosely, 1922

Hydroptila angulata is widely distributed in Ireland but is not common, having been recorded from only nine counties. The larvae occur in flowing waters including streams, in fens and lakes. Only the final larval instar has a bean shaped case which like most *Hydroptila* is made of silk, laterally compressed and covered with sand grains (Fig. 42). The dorsal edge is more or less curved while the ventral one is straight. *Hydroptila* larvae have been reported as feeding on filamentous algae,

diatoms and unicellular algae (Wiggins, 1977). The species is widespread in Europe but with a discontinuous distribution.

Flight period: May–October (7 May–10 October).

Counties and 10km squares: Armagh, Carlow, Dublin, Fermanagh, Galway, Kerry, Kildare, Mayo, Roscommon, Wexford, Wicklow (11/32). The species is known from twenty-two 10km squares (22/1019).

FIGURES 40-41. Known Irish and European distributions of *Hydroptila angulata*.

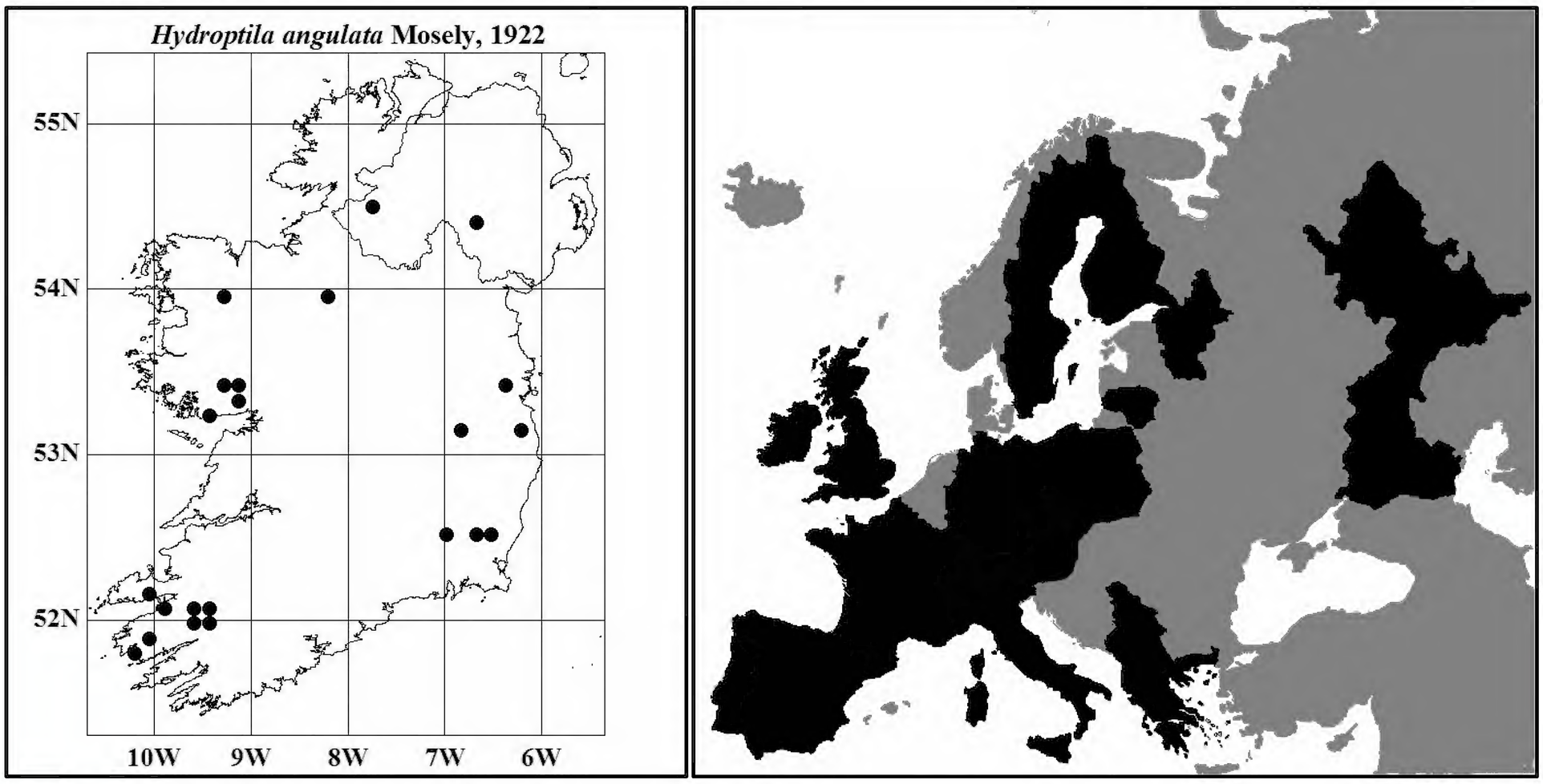
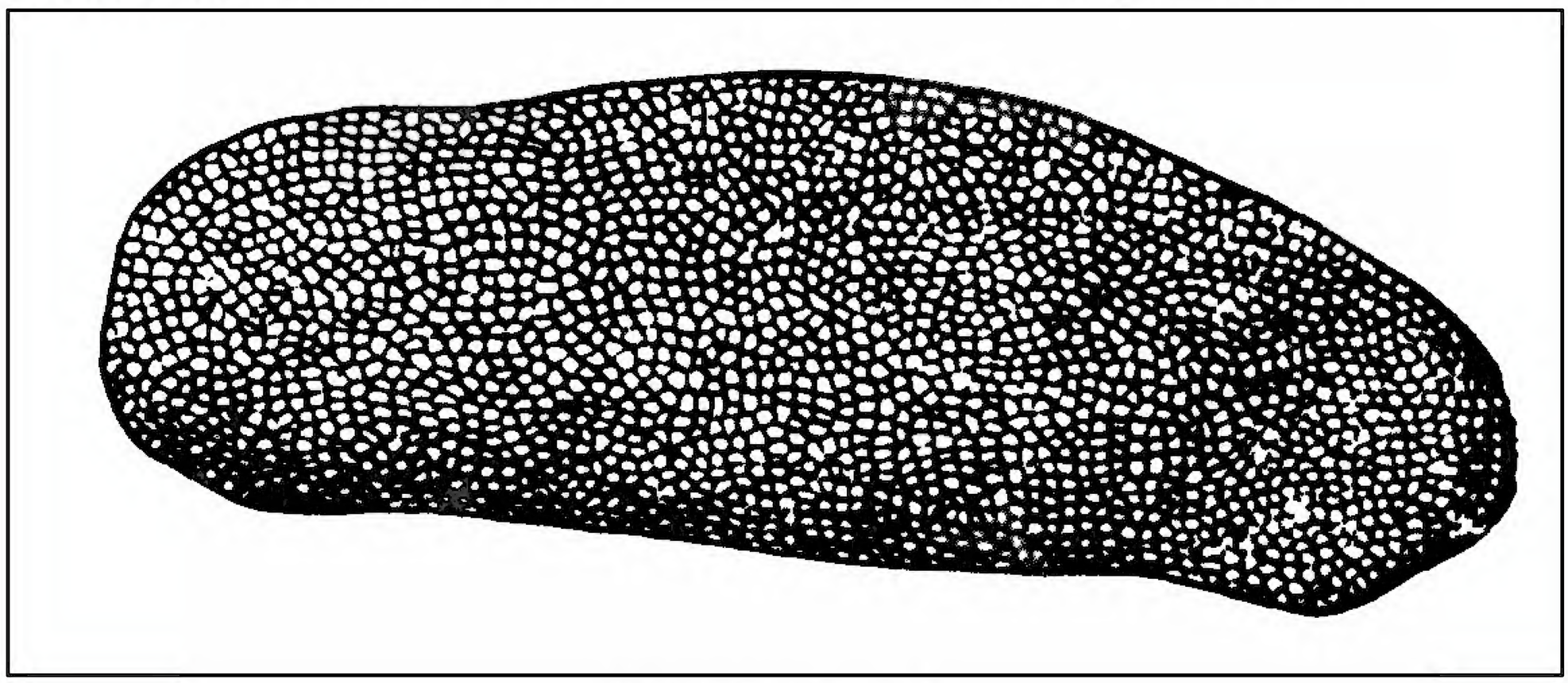


FIGURE 42. The larval case of *Hydroptila angulata* (after Lepneva, 1964).



Published records

Mosely, 1922 (**IRELAND:** west coast). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Hydrophila* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Neboiss, 1963* (**DUBLIN:** Dublin, 6 August [1835, J. Curtis] (most probably *Hydroptila angulata*)). *Marshall, 1978a* (**IRELAND**). *Marshall, 1978b* ((M0-2-) = [M0822], (M1-4-) = [M1343], (O1-3-) = [O1337, Tolka R.], (V9-9-) = [V9291]).

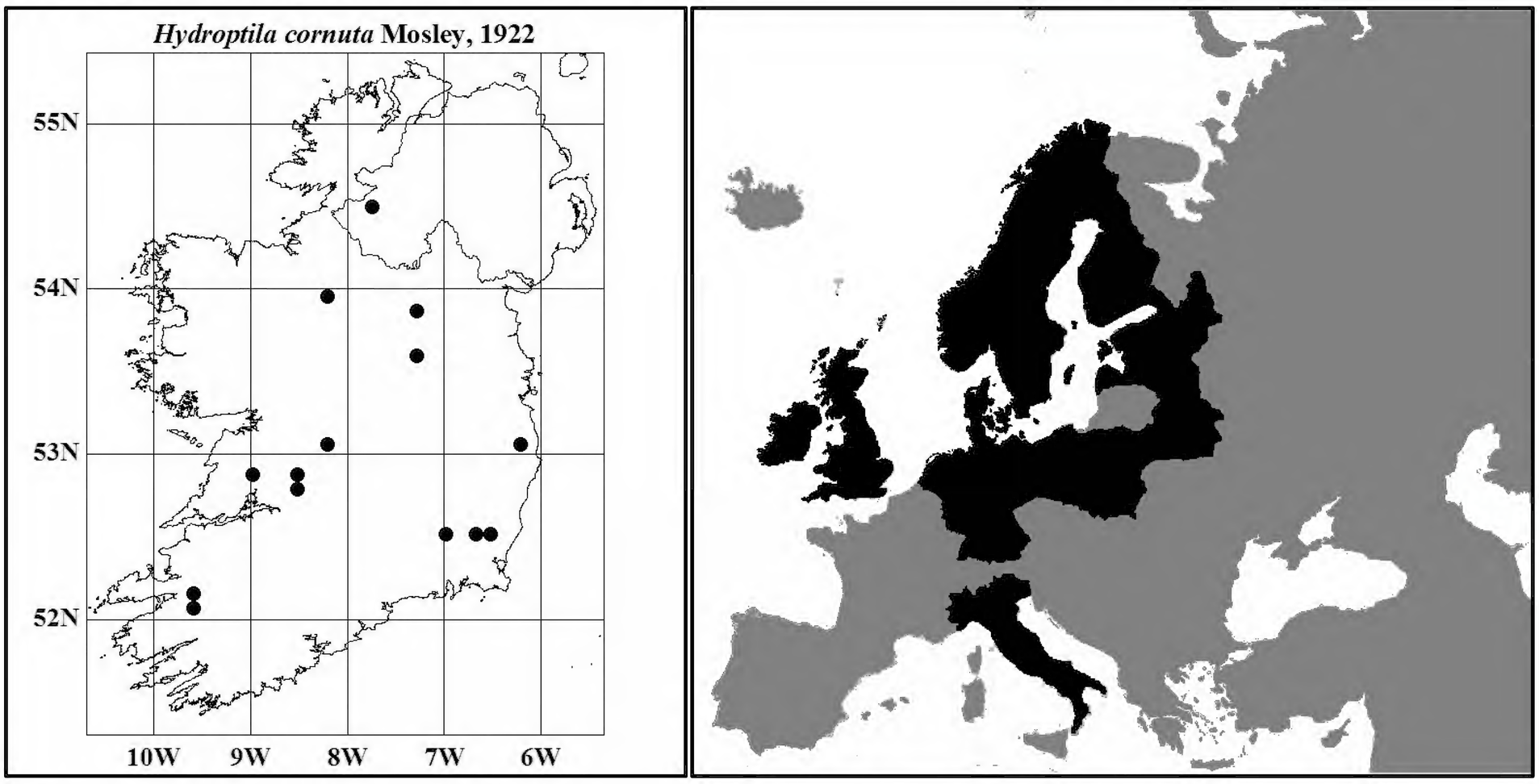
Botosaneanu and Malicky, 1978 (**IRELAND**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake). *O'Connor, 1987* (**GALWAY**. **KERRY**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *O'Connor and Nelson, 2012* (**GALWAY**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686); Muckross Lake (V9485); R. Flesk (V9789)). *O'Connor and Bond, 2014* (**ARMAGH:** Aughinlig near Moy (H8753). **GALWAY**. **KERRY**). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Lower L. Erne (H1758)).

Unpublished records and voucher specimens

CARLOW: R. Barrow (S7238), St Mullins, ♂ 15 August 1994, JPOC/MAOC, lockhouse, ♂ 22 July 2015, JPOC/MAOC, det. JPOC, (S7237), St Mullins, LTS 29♂♂30♀♀ 22 July 2015, JPOC/MAOC, det. JPOC; **St Mullins** (S7237), small river entering R. Barrow, 3♂♂ 14 August 1994, JPOC. **DUBLIN: Dublin,** ♂ 6 August [1835], J. Curtis, det. A. Neboiss (NMV). **GALWAY: L. Corrib** (M2642), Keekill, MVLT ♀ 2 August 2003, KGMB, det. JPOC, (M2531), Lower, ♂ 28 May 1980, BC, det. JPOC (NMI), (M2341), Middle, ♂ 27 June 1980, BC, det. JPOC (NMI), (M2741), Cloonmore, LT ♂ 6 August 2014, MG/CC, det MG; **Oughterard** (M1343), adult 3-9 August 1926, MEM (BMNH). **KERRY: Derriana L.** (V6073), ♂ 6 July 1973, JPOC, conf. JEM (NMI), (V6274), stream near, 3♂♂ 1-13 July 1979, JPOC (NMI); **Doolough** (V9585), LT ♂ 26 August 1987, JPOC/MAOC, det. JPOC; **Killarney**, adults 24 June & 7a July 1887, [JJFXK], conf. JPOC (BMNH), ♂ 11 August 1887, JJFXK (misidentified as *H. forcipata*), det. JPOC (NMI), ♂ 16 July 1887, JJFXK, det. MEM, conf. JPOC (HMAG), ♂ 23 August 1902, det. MEM (HMAG); **L. Caragh** (V7392), ♂♀ 5 July 1973, JPOC; **L. Currane** (V5265), ♂ 6 July 1973, JPOC; **L. Doon** [L. Slat] (Q6107), 6♂♂♀ 7 July 1973, JPOC (NMI); **L. Guitane** (W0385), ♂2♀♀ 10 October 1972, (W0285), 13♂♂ 3 July 1973 (NMI), JPOC; **L. Leane** (V9291), Golf Course, 4♂♂♀ 5 September 1972, JPOC (NMI), 2♂♂ 29 May 1974, ♂♂ 1 June 1995, (V9686), boat house, ♂ 23 August 1973, ♂ 18 May 1974, (V9590), Kenmare Estate, ♂♀ 5 September 1972, (V9488), Ross Island, ♂ 18 May 1973, JPOC; **R. Flesk** (W0185), leaving L. Guitane, 3♂♂♀ 10 October 1972, JPOC (NMI); **Torc stream** (V9684), ♂ 29 May 1974, JPOC. **KILDARE: Newbridge (Pollardstown) Fen** (N7715), ♀ 7 May 1989, JAG, det. JPOC. **MAYO: L. Conn** (G2105), Pontoon, adult 3 September 1948, RS, det. JRH. **ROSCOMMON: L. Key** (G8404), Rockingham, ♂ 11 August 2001, JPOC. **WEXFORD: Killoughrim Forest** (S9041), stream, LTS 2♂♂3♀♀ 28 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9739), Enniscorthy, 43♂♂ 27 July 2015 (NMI), (S9738), 5♂♂ 28 July 2015, all JPOC/MAOC, det. JPOC. **WICKLOW: Powerscourt Waterfall** (O1912), ♀ 31 July 1986, JPOC.

12. *Hydroptila cornuta* Mosley, 1922

FIGURES 43-44. Known Irish and European distributions of *Hydroptila cornuta*.



Hydroptila cornuta is widely distributed but local in Ireland. The larvae occur in lakes, rivers and streams. A large population is present in the River Barrow at Saint Mullins, County Carlow, where the river is freshwater but tidal. Only the final larval instar has a case. The species has a discontinuous European distribution being mainly found in northern Europe but also occurring in Italy.

Flight period: May–September (1 May–3 September).

Counties and 10km squares: Cavan, Carlow, Clare, Fermanagh, Kerry, Roscommon, Tipperary, Westmeath, Wexford, Wicklow (10/32). The species is known from fourteen 10km squares (14/1019).

Published records

O'Connor, 1978a (**CAVAN**. **CLARE**. **KERRY**. **WICKLOW**). *Marshall, 1978a* (**IRELAND**). *Marshall, 1978b* ((O1-0-) = [O1502], (R7-7-) = [R7073]). *O'Connor and Bracken, 1980a* (**WICKLOW:** L. Dan (O1502), adults). *O'Connor, 1987* (**CAVAN**. **CLARE**. **KERRY**. **WICKLOW**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**WICKLOW**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Lower L. Erne (H1758)).

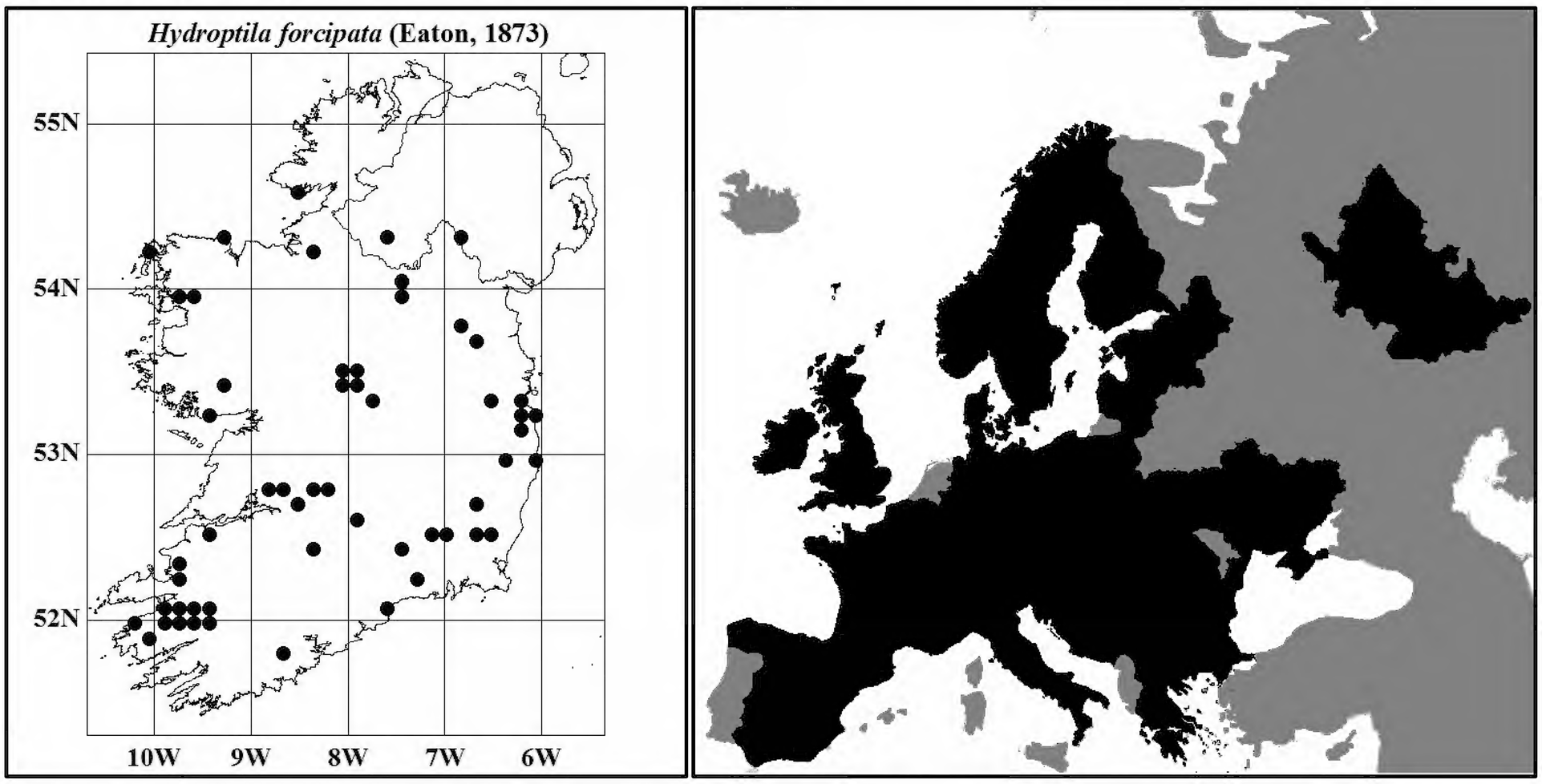
Unpublished records and voucher specimens

CARLOW: R. Barrow (S7237), St Mullins, LTS 45♂♂35♀♀ 22 July 2015, JPOC/MAOC, det. JPOC (NMI), (S7238), lockhouse, ♂ 22 July 2015, JPOC/MAOC, det. JPOC. **CAVAN: L. Sheelin** (N4686), Crover, 2♂♂ 6 August 1990, JPOC (NMI); **Mount Nugent R.** [Inny R.] (N4986), ♂ 5 August 1973, JPOC. **CLARE: L. Derg** (R6878), ♀ LT 2/3-September 1973, JPOC (NMI); **R. Fergus** (R3478), near Ennis, ♂ 2 September 1973, JPOC; **R. Shannon** (R6767), O'Brien's Bridge, 4♂♂2♀♀ 3 September 1973, (R7073), 2♂♂ 3 September 1973 (NMI), JPOC. **FERMANAGH:**

Lower L. Erne (H1758), near White Cairn, Castle Archdale County Park, 3♂♂ 1 September 2015, JPOC/MAOC, det. JPOC (NMI). **KERRY: L. Leane** (V9188), mountain shore, ♂ 27 August 1987, JPOC; **O'Sullivan's Cascade** (V9188), shore of L. Leane, ♀ 27 August 1987, JPOC; **R. Maine** (Q8905), ♂2♀♀ 27 August 1973, JPOC. **ROSCOMMON: L. Key** (G8404), Rockingham, ♂ 11 August 2001, JPOC. **TIPPERARY: Gortmore** (M8500) [L. Derg], 2♂♂ 18 June 1986, KGMB, det. JPOC (NMI). **WESTMEATH: L. Derravaragh** (N4663), 3♂♂ 30 May 1990, JPOC. **WEXFORD: Killoughrim Forest** (S9041), stream, LTS ♂5♀♀ 28 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9739), Enniscorthy, 4♀♀ 27 July 2015, JPOC/MAOC, det. JPOC. **WICKLOW: L. Dan** (O1502), 2♂♂21♀♀ 1 August (♂ genitalia on slide) & 5♀♀ 4 August 1972, det. JPOC, conf. A. P. Nimmo (NMI).

13. *Hydroptila forcipata* (Eaton, 1873)

FIGURES 45-46. Known Irish and European distributions of *Hydroptila forcipata*.



Hydroptila forcipata is widely distributed in Ireland. The larvae occur in flowing waters ranging from streams to rivers. Only the final larval instar has a case. This instar was described by Fahy (1972d). The species is widespread in Europe.

Flight period: April–October (19 April–1 October).

Counties and 10km squares: Carlow, Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Leitrim, Limerick, Mayo, Meath, Monaghan, Offaly, Roscommon, Tipperary, Waterford, Westmeath, Wexford, Wicklow (23/32). The species is known from fifty-five 10km squares (55/1019).

Published records

McLachlan, 1874-1884 (**IRELAND**). *King, 1888a* (**KERRY:** Flesk R. (V9689); Gap of Dunloe (V8787); Horses' Glen (V9981). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WESTMEATH:** Glasson (N0947)). *Morton, 1892b* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* (**DONEGAL:** Largy R. (G6675). **KERRY:** Flesk R. (V9689); Gap of Dunloe

(V8787); Horse's Glen (V9981). **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WESTMEATH:** Glassan [Glasson] (N0947)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Hydrophila* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Beirne, 1939* (**WICKLOW:** Quill (O2413)). *Fahy, 1972a* (**MAYO:** (F9505)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Fahy, 1972d* (**MAYO:** Ballycastle and Belmullet streams). *Marshall, 1978b* ((F7-3-) = [F7032], (G1-4-) = [G1241], (G6-7-) = [G6675], (H7-4-) = [H7241], (M0-2-) = (M0822), (M1-4-) = [M1343], (N0-4-) = [N0146], (O2-8-) = [O2518], (T0-9-) = [T0594], (V8-8-) = [V8787], (V9-8-) = [V9686], (V9-9-) = [V9291], (W0-8-) = [W0285]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480), (V7186), (V7192)). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor and Wise, 1984* (**KERRY:** Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); Doolough (V9585); L. Derriana stream (V6274); R. Flesk (V9789); R. Inny (V5572)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Arney R. (H2336)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Arney R. (H2336)).

Unpublished records and voucher specimens

CARLOW: R. Barrow (S7237), St Mullins, LTS 2♂♂ 22 July 2015, JPOC/MAOC, det. JPOC, stream entering R. Barrow, 3♂♂4♀♀ 30 July 2015, JPOC, (S7043), Tinnahinch, dead inside a light-fitting on a bridge, ♂ 21 August 1996, JPOC; **R. Slaney** (S9161), Clonegal, adult 31 August 1946, JRH; **St Mullins** (S7238), ♂ 9 August 1994, (S7439), stream, ♂ 15 August 1994, 4♂♂2♀♀ 24 August 2000, JPOC; **stream/river** (S7237) entering R. Barrow, St Mullins, ♂ 26 August 2012, JPOC. **CAVAN: R. Erne** (H3712), ♂♀ 4 August 1973, JPOC; **stream** (N3996), near Bellananagh, ♂♀ 16-17 June 1973, JPOC. **CLARE: Gourna R.** (R5166), ♂♀ 12 July 1973, JPOC; **north of Sixmilebridge** (R4767) [Rally R.], ♂♀ 6 August 1986, CM/OSF (SINMNH). **CORK: Inishannon** [R. Brandon] (W5257), ♂ 30 April 1985, KGMB, conf. JPOC. **DUBLIN: R. Dodder** (O1730), Clonskea [Clonskeagh], adult 9 September 1946, adults 16 August & 9 September 1947, JRH. **FERMANAGH: Arney R.** (H2336), Old Drumane Bridge, ♀ 26 August 2014 (NMI), ♂ 1 September 2015, JPOC/MAOC, det. JPOC (NMI). **KERRY: Curraheen R.** (Q7811), LT ♀ 7-8 July 1973, JPOC; **Doolough** (pond) (V9585), ♂3♀♀ 2-3 July 1973, JPOC; **Gaddagh R.** (V8391), 2♂♂4♀♀ 24 August 1973, JPOC, conf. JEM (NMI); **Killarney**, 3 August 1887, [JJFXK] (BMNH), ♂ 27 June 1887, JJFXK, conf. JPOC (NMI); **L. Derriana** (V6274), mountain stream, LT ♀♂ 1-13 July 1979, JPOC (NMI); **L.**

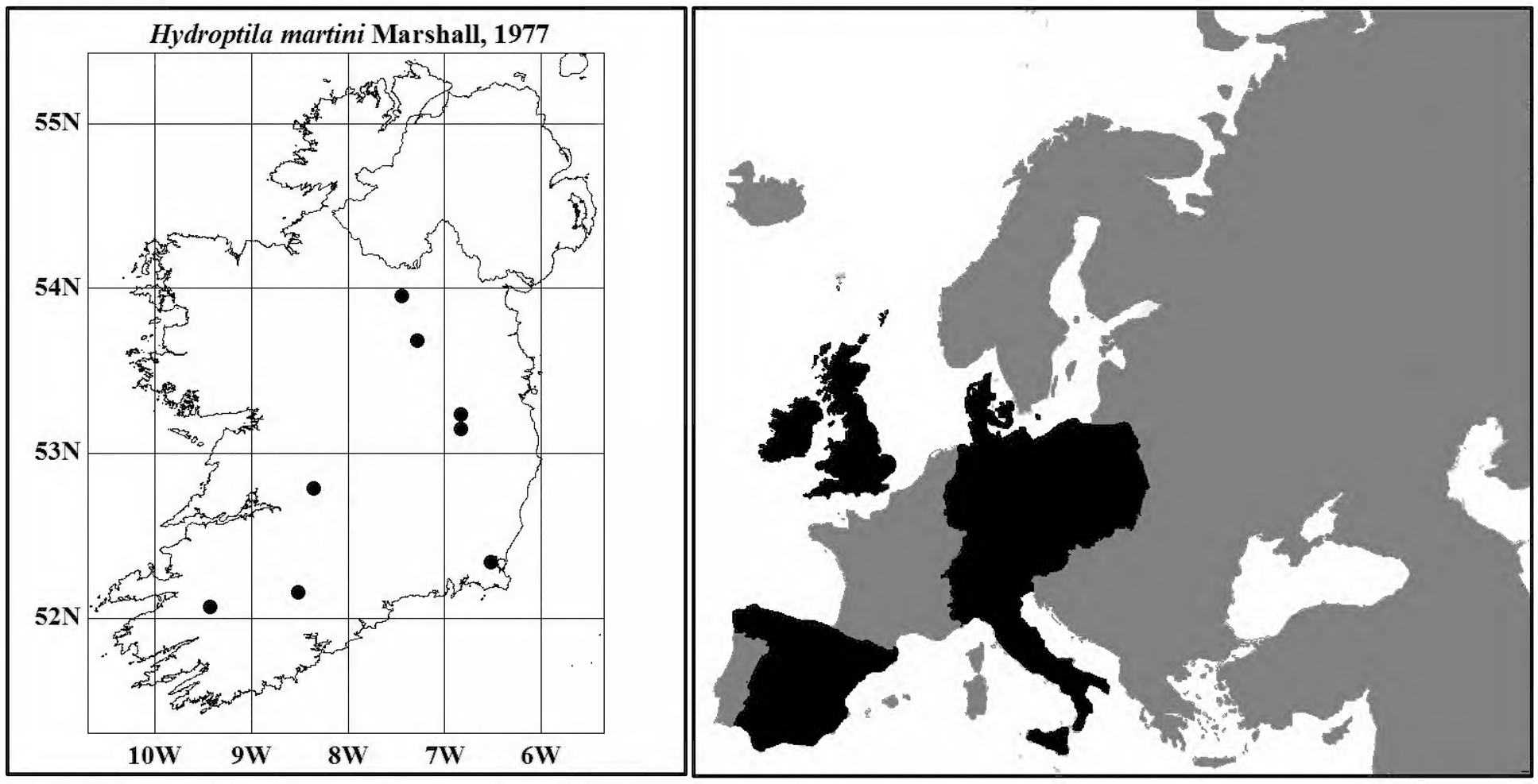
Guitane (W0285), ♀♀ 3 July 1973, JPOC (NMI); **Muckross Lake** (V9684), Torc shore, ♂ 24 August 1973, ♂ 28 May 1974, (V9685), ♀ 19 April 1973 (NMI), JPOC; **R. Brick** (stream) (Q8523), 2♂♂ 28 August 1973, JPOC; **R. Caragh** (V7186), ♂ 28 August 1973, JPOC; **R. Ferta** (V5282), 2♂♂♀ 26 August 1973, JPOC, conf. JEM (NMI); **R. Flesk** (V9689), 5♂♂ 28 May 1974, (V9789), 17♀♀ 3-4 July & 10 ♂♂40♀♀ 24-25 August 1973, LTS, ♂12♀♀ 24/25 August 1973, conf. JEM (NMI), 2♂♂ 5 September 1972 (NMI), (V9689), 5♂♂ 28 May 1974, JPOC; **R. Inny** (V5572), LT ♂ 5-6 July 1973, JPOC; **Shanow R.** (Q8623), 2♂♂ 28 August 1973, JPOC; **stream** (V6986), Drom East, ♂ 27 August 1973, JPOC; **stream** (R0540), near Newtown Sandes, 2♂♂2♀♀ 29 August 1973, JPOC, conf. JEM (NMI); **stream** (V6986), near Caragh, ♂ 27 August 1973, JPOC; **stream** (R0540), entering Galey R., 2♂♂2♀♀ 29 August 1973, JPOC; **Torc Cascade** (stream) (V9684), ♂ 28 May 1974, JPOC. **KILDARE: Louisa Bridge** (N9936), ♂ 22 August 1982, JPOC. **KILKENNY: L. Arrigle** (S5437), Knocktopher, ♂ 17 June 1985, KGMB, det. JPOC (NMI); **The Coum R.** (S6337) where it enters R. Nore, Inistioge, 12♂♂9♀♀ 10 July 2014, JPOC/MAOC, det. JPOC. **LEITRIM: Bonet R.** (G8030), 4♂♂♀ 6 August 1989, JPOC. **LIMERICK: Galbally** (R7927), ♀ 14 June 1985, KGMB; **R. Shannon** (R6663), Castleconnell, 2♂♂♀ 3 August 1988, JPOC (NMI). **MAYO: Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT ♂♀ 30 May-20 June 1997, MCDS, det. JPOC (NMI). **MEATH: R. Blackwater** (N7377), ♂ 13 June 1976, JPOC; **R. Boyne** (N8868), near Navan, ♂♂ 1 October 1992, JPOC (NMI). **OFFALY: R. Brosna** (N2130), Ballycumber, adult 5 September 1947, JRH. **TIPPERARY: Cabragh Bog** (S1054), MVLT ♀ 28 June 1994, KGMB, det. JPOC (NMI); **Kilmastulla R.** (R7871), (R7269), (R9173), adults 1976-1977, MAOC; **R. Lingaun** (S4031), Slate Quarries, 4♂♂ 21 August 2000, JPOC. **WATERFORD: Collingan R.** (X2395), ♂ 15 August 2000, JPOC; **Portlaw Estate** (S4415), river, ♀ 16 July 1987, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 10b August 1888, [JJFXK] (BMNH). **WEXFORD: Killoughrim Forest** (S9041), stream, LTS 3♀♀ 28 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9739), Enniscorthy, 26♂♂14♀♀ 27 July 2015 (NMI), (S9738), ♂♀ 28 July 2015, all JPOC/MAOC, det. JPOC. **WICKLOW: Knocksink Woods** (O2118), streams, MT, ♂ 6-10 July 1995, CR, det. JPOC; **R. Bray** (O2518), 2♂♂ 22 July 1972, JPOC (NMI); **Three Mile Water** (T3188), stream, ♂2♀♀ 19 September 1973, JPOC.

14. *Hydroptila martini* Marshall, 1977

Hydroptila martini was added to the Irish list by Marshall (1977) from "Eire" but gave no locality. The relevant material had been collected by JPOC in a small stream near Bellananagh, County Cavan (O'Connor, 1978a; O'Connor and O'Connor, 1980). The species is uncommon in Ireland. The larvae occur in flowing waters ranging from streams and rivers to canals. Only the final larval instar has a case. Pupae are often

found together in aggregations under stones. The species has a limited and discontinuous European distribution.

FIGURES 47-48. Known Irish and European distributions of *Hydroptila martini*.



Flight period: June–September (9 June–11 September).

Counties and 10km squares: Cavan, Cork, Kerry, Kildare, Tipperary, Westmeath, Wexford (7/32). The species is known from eight 10km squares (8/1019).

Published records

Marshall, 1977 (**EIRE** [IRELAND]**:** "examples from"). *O'Connor, 1978a* (**CAVAN**). *Marshall, 1978a* (**EIRE** [IRELAND]). *Marshall, 1978b* ((N3-9-) = [(N3996)]). *Botosaneanu and Malicky, 1978* as n. sp. Marshall (**IRELAND**). *O'Connor and O'Connor, 1980* (**CAVAN:** small stream near Bellananagh (N3996). **TIPPERARY:** Kilmastulla R. (R8072). **WESTMEATH:** small stream near Castlepollard (N4375). **WEXFORD:** small stream near Drinagh (T0517)). *O'Connor, 1987* (**CAVAN**. **KERRY**. **KILDARE**. **WESTMEATH**. **WEXFORD**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**EIRE**. **CAVAN**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and O'Connor, 2013* (**KILDARE:** Pollardstown (Newbridge) Fen stream (N7616)).

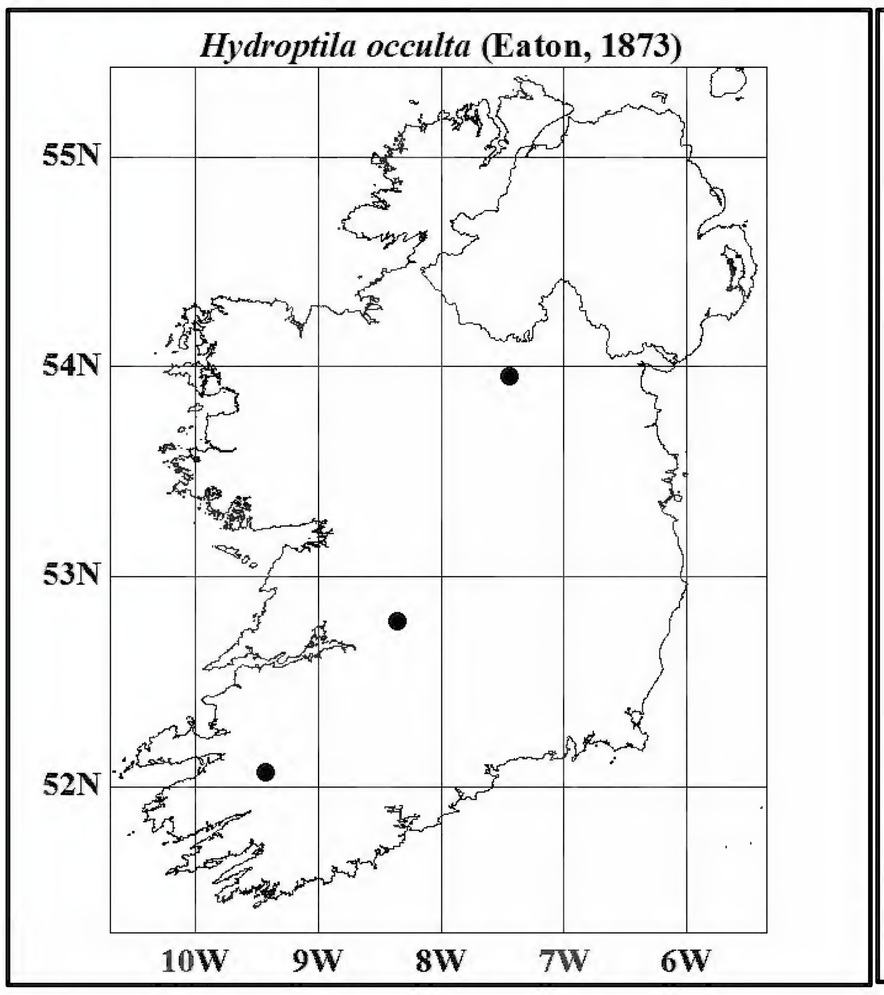
Unpublished records and voucher specimens

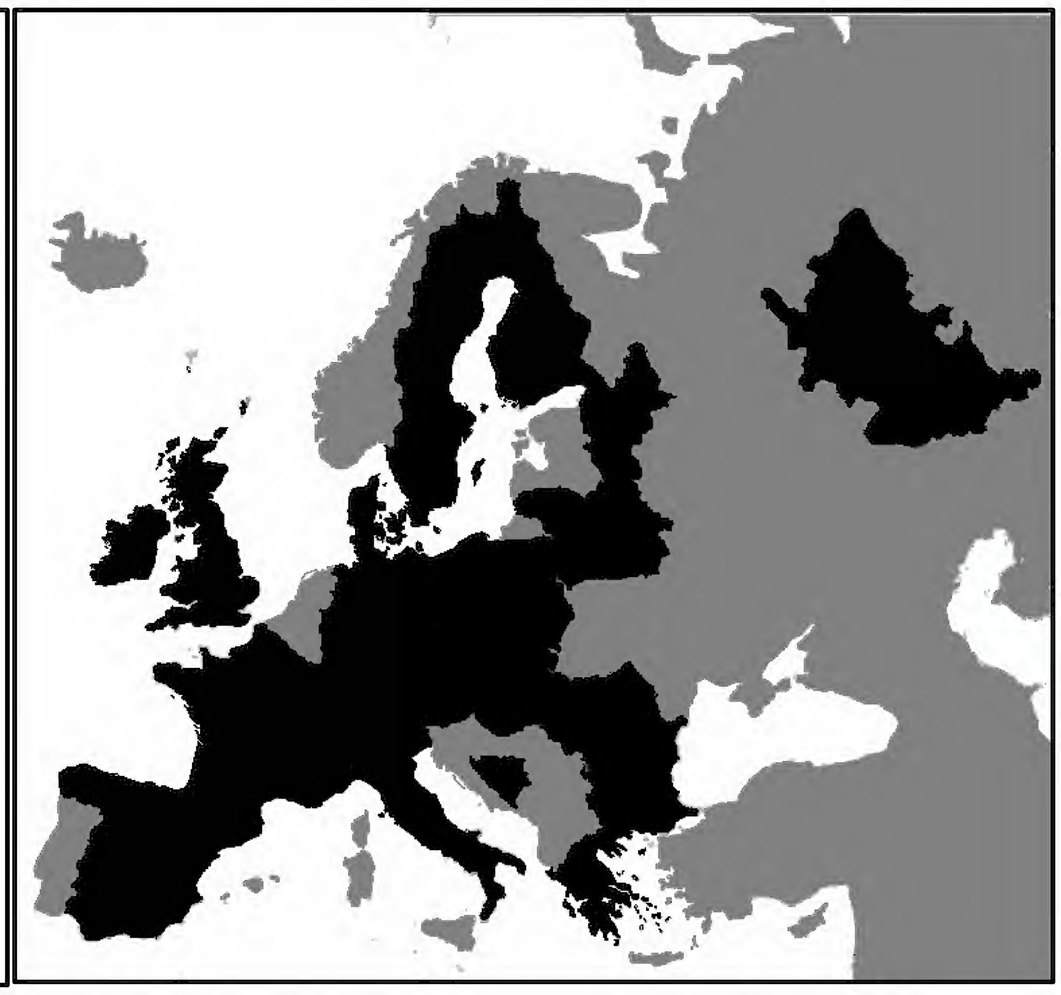
CAVAN: stream (N3996), ♂♂♀♀ 13 June 1976, JPOC, det. JEM (NMI). **CORK: Anne's Grove** [near R. Awbeg] (R6705), ♀ 14 July 1986, KGMB (NMI). **KERRY: Killarney** [V9787], ♂ 24a July & ♂ 28 July 1887, [JJFXK], det. JEM (BMNH). **KILDARE: canal at Milltown** (N7617), 10♀♀ 3 August 1986, CM/OSF (SINMNH); **Pollardstown (Newbridge) Fen** stream (N7616), 3♂♂ 11 July 1982, 2♂♂ 11 September 1985, JPOC, ♂ 31 July 1988, JPOC/MAOC, det. JPOC (NMI), (N7715), ♂♂♀♀ 24 June 1989, JAG, det. JPOC (NMI). **TIPPERARY: Kilmastulla R.** (R8072), 2♂♂ June 1976, MAOC (NMI). **WESTMEATH: small stream**

(N4375), near Castlepollard, ♂ 18 August 1978, JPOC (NMI). **WEXFORD: small stream** (T0517), near Drinagh, 5♂♂♀, 9 June 1978, JPOC/MAOC, det. JPOC (NMI).

15. *Hydroptila occulta* (Eaton, 1873)

FIGURES 49-50. Known Irish and European distributions of *Hydroptila occulta*.





Hydroptila occulta is a rare species in Ireland. The larvae occur in flowing waters including streams and rivers. Only the final larval instar has a case. The species has a widespread but disjointed distribution in Europe.

Flight period: June–July (14 June–28 July). There are only a small number of Irish adult records. Barnard and Ross (2012) give the British flight period as June–October.

Counties and 10km squares: Cavan, Kerry, Tipperary (3/32). The species is known from three 10km squares (3/1019).

Published records

O'Connor and O'Connor, 1980 (**CAVAN:** small stream near Bellananagh (N3996)). **TIPPERARY:** Kilmastulla R. (R8072)). *O'Connor, 1987* (**CAVAN**. **TIPPERARY**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**CAVAN**. **TIPPERARY**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

CAVAN: stream (N3996), Bellananagh, ♂ 16-17 June 1973, JPOC, conf. JEM (NMI). **KERRY: Killarney** (V9787), 2 adults 24a July & 28 July 1887, [JJFXK] (det. JEM) (BMNH). **TIPPERARY: Kilmastulla R.** (R8072), ♂3♀♀ June & ♂ 14 June 1976, MAOC (NMI).

16. *Hydroptila pulchricornis* Pictet, 1834

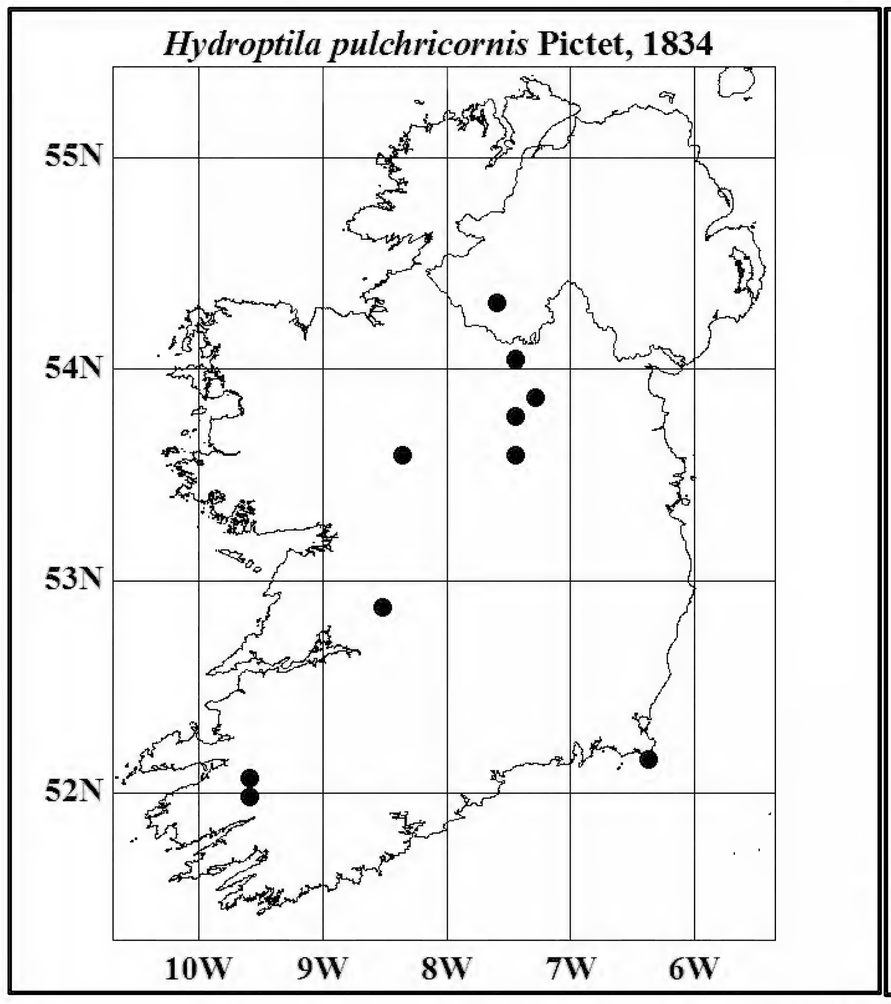
Hydroptila pulchricornis is an uncommon species in Ireland. The larvae normally occur in lakes but adults have also been found at a stream in a marsh. Only the final

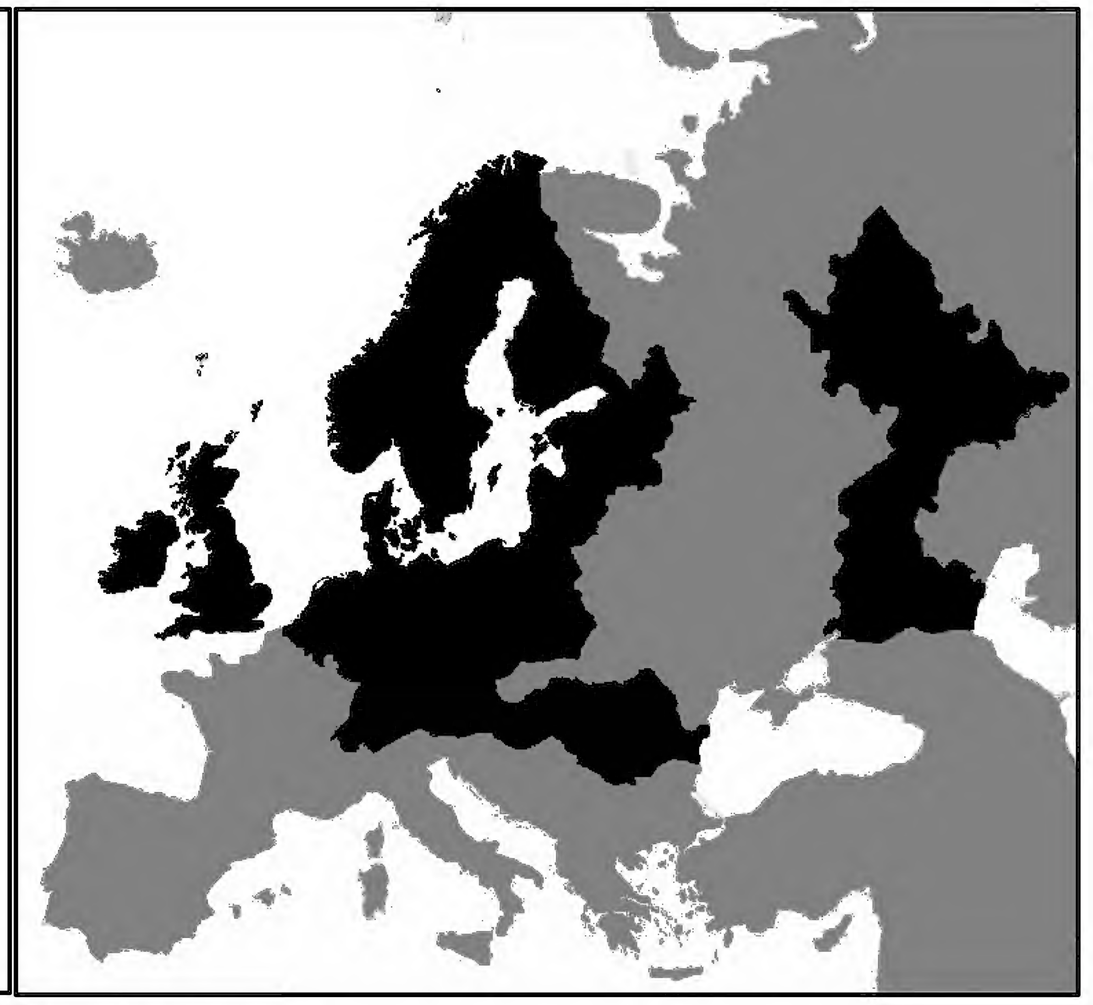
larval instar has a case. Outside the British Isles, the species is known from central and northern Europe and east Russia.

Flight period: May–October (29 May–7 October). Barnard and Ross (2012) give the British flight period as May–September.

Counties and 10km squares: Cavan, Clare, Fermanagh, Galway, Kerry, Longford, Westmeath, Wexford (8/32). The species is known from ten 10km squares (10/1019).

FIGURES 51-52. Known Irish and European distributions of *Hydroptila pulchricornis*.





Published records

O'Connor, 1978a (**CAVAN**. **CLARE**. **KERRY**). *Marshall, 1978a* (**IRELAND**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane). *O'Connor, 1987* (**CAVAN**. **CLARE**. **KERRY**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Bracken, 1998* (**KERRY:** Killarney). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**CAVAN**. **CLARE**. **KERRY**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Mill L. (H2438)).

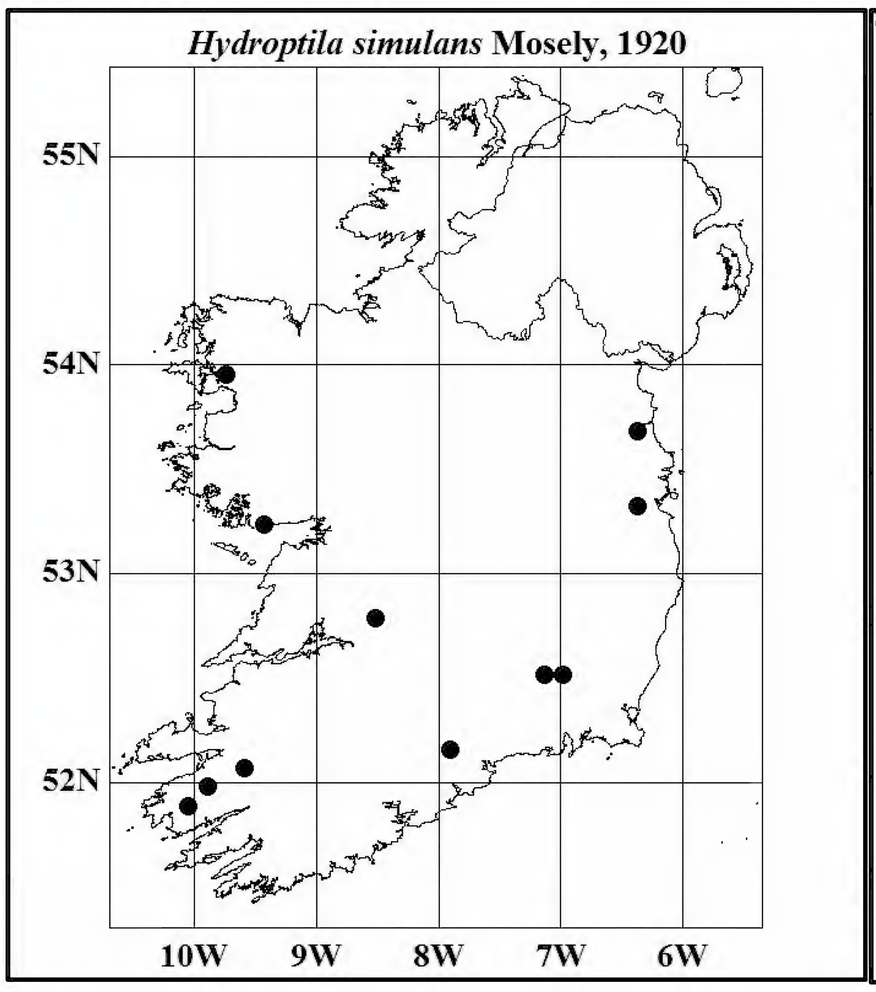
Unpublished records and voucher specimens

CAVAN: L. Oughter (H3308), ♂ 4 August 1973, JPOC (NMI); **L. Sheelin** (N4686), IET 3-7 October 1973, PG, conf. JPOC. **CLARE: L. Derg** (R6878), LT 4♂♂16♀♀ 2-3 September 1973, JPOC (NMI). **FERMANAGH: Mill L.** (H2438), near Bellanaleck, LT 3♂♂ 26 August 2014, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Hollygrove Lake** [Ballaghdacker L.] (M7857), 7♂♂4♀♀ 7 August & 15♂♂2♀♀ 8 August 2001, JPOC. **KERRY: Doolough** (V9585), LT ♂ 23-24 August 1973, JPOC (NMI); **Killarney**, ♂ 30 June & ♂ 25 July 1887, [JJFXK], det. MEM (HMAG); **L. Leane** (V9291), Golf Course, ♂ 29 May 1974 (NMI), (V9488), Ross Castle, ♂ 29 May 1974, JPOC. **LONGFORD: Derragh L.** (N3979), ♂ 20 August 1989, PA, det.

JPOC (NMI). **WESTMEATH: L. Owel** (N4156), adults 1971, MK. **WEXFORD: Nethertown** (T1104), ♂ 4 June 1984, JPOC/MAOC, det. JPOC (NMI).

17. *Hydroptila simulans* Mosely, 1920

FIGURES 53-54. Known Irish and European distributions of *Hydroptila simulans*.



Hydroptila simulans is an uncommon species in Ireland. The larvae occur in flowing waters including streams and rivers. Only the final larval instar has a case. The species is widespread in Europe but has not been recorded from the Iberian Peninsula.

Flight period: May–August (20 May–29 August).

Counties and 10km squares: Carlow, Dublin, Galway, Kerry, Kilkenny, Limerick, Mayo, Meath, Waterford (9/32). The species is known from eleven 10km squares (11/1019).

Published records

Mosely, 1927 (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Hydrophila* ([**GALWAY**]**:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822)). *Marshall, 1978a* (**IRELAND**). *Marshall, 1978b* ((M0-2-) = [M0822]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7281), (V7182)). *O'Connor, 1987* (**IRELAND:** western and south-western). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**GALWAY**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** R. Inny (V5572)).

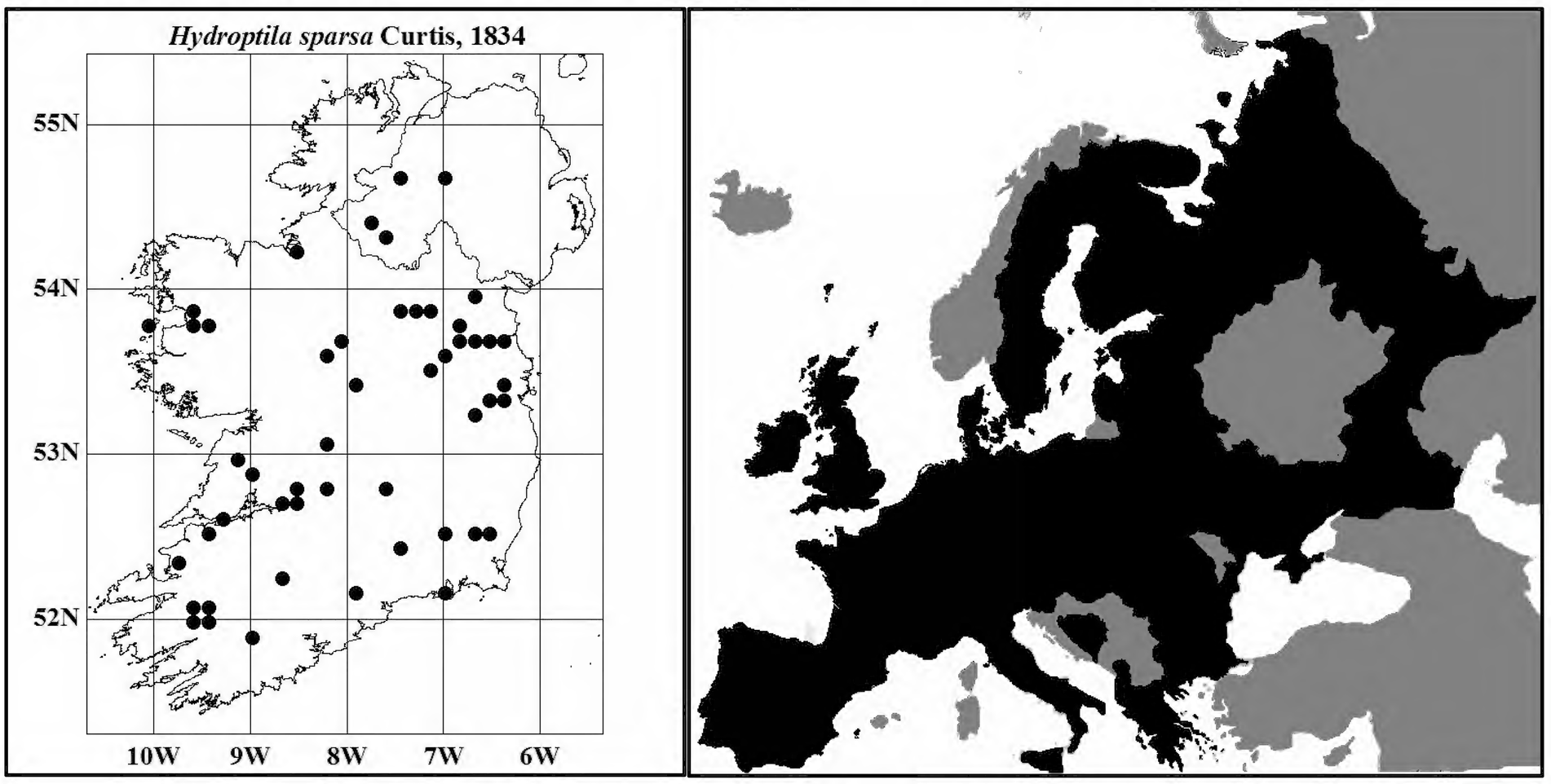
Unpublished records and voucher specimens

CARLOW: Bahana Woods (S7239), ♂ 14 June 1991, JPOC/MAOC, det. JPOC; **R. Barrow** (S7043), Tinnahinch, dead inside a light-fitting on a bridge, ♂♂ 21 August

1996, JPOC; **stream** (S7238), St Mullins, 4♂♂2♀♀ 24 August 2000, JPOC. **DUBLIN: R. Liffey** (O0735), Strawberry Beds, ♂♀ 29 August 2015 (NMI), JPOC (NMI). **KERRY: Killarney**, ♂ 16 July 1887, [JJFXK], det. MEM (HMAG); **L. Leane** (V9291), Golf Course, ♂ 26 August 1987, JPOC (NMI). **KILKENNY: R. Nore** (S6337), Inistioge, 32♂♂20♀♀ 16 June 1991, 2♂♂ 4 July 1995, JPOC. **LIMERICK: R. Shannon** (R6767), Castleconnell, LT 9♂♂24♀♀ 12-13 July 1973, JPOC (NMI). **MAYO: Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT 7♂♂ 30 May-20 June 1997, MCDS, det. JPOC (NMI). **MEATH: small canal** (O0476), near Oldbridge, 2♂♂11♀♀ 24 August 1986, JPOC, det. JPOC and PCB (NMI). **WATERFORD: R. Blackwater** (X0498), Lismore, 2♂♂ 20 May 1999, JPOC.

18. *Hydroptila sparsa* Curtis, 1834

FIGURES 55-56. Known Irish and European distributions of *Hydroptila sparsa*.



Hydroptila sparsa is widely distributed in Ireland and often common. The larvae occur in lakes and in flowing waters including streams and rivers. Only the final larval instar has a case. The species is widespread in Europe.

Flight period: April–September (28 April–20 September).

Counties and 10km squares: Carlow, Cavan, Clare, Cork, Dublin, Fermanagh, Kerry, Kildare, Kilkenny, Limerick, Longford, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford (22/32). The species is known from fifty 10km squares (50/1019).

Published records

King, 1888a (**DUBLIN:** Tolka (O1437). **KERRY:** Denough [Deenagh] R. (V9792); Dinish (V9385); Ross Castle (V9488). **MAYO:** Carrowbeg R. (M0084); Cushinsheen Laogh [Cushinsheeaun L.] (M0482); Mount Brown [Kinlooey] Laogh (M0381). **SLIGO:** Sligo (G6935). **WESTMEATH:** Twy [Breensford] R. (N0943)). *King and Halbert, 1910* (**DUBLIN:** R. Tolka (O1437). **KERRY:** Cloghereen (V9787);

Deenagh R. (V9792); Gap of Dunloe (V8787); Horse's Glen (V9981); Ross Castle (V9488). **MAYO:** Carrowbeg R. (M0084); Cushinsheeaun L. (M0482); Mount Brown [Kinlooey] L. (M0381). **WESTMEATH:** Twy [Breensford] R. (N0943)). *Halbert, 1912* (**MAYO:** Westport (L9994)). *McCarthy, 1977* (**MEATH:** Trimblestown R. (N7262)). *Marshall, 1978b* ((G6-3-) = [G6935], (L9-8-) = [L9581], (L9-9-) = [L9994], (M0-8-) = [M0080], (N1-4-) = [N1043], (O1-3-) = [O1337, Tolka R.], (V8-8-) = [V8787], (V9-8-) = [V9686], (V9-9-) = [V9291], (W0-9-) = [W0093]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *O'Connor and Bond, 2009* (**TYRONE:** Killynure (H4178)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** L. Leane (V9686)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Arney R. (H2336); Lower L. Erne (H2053)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** R. Sillees (H2341); Upper L. Erne (H2339)).

Unpublished records and voucher specimens

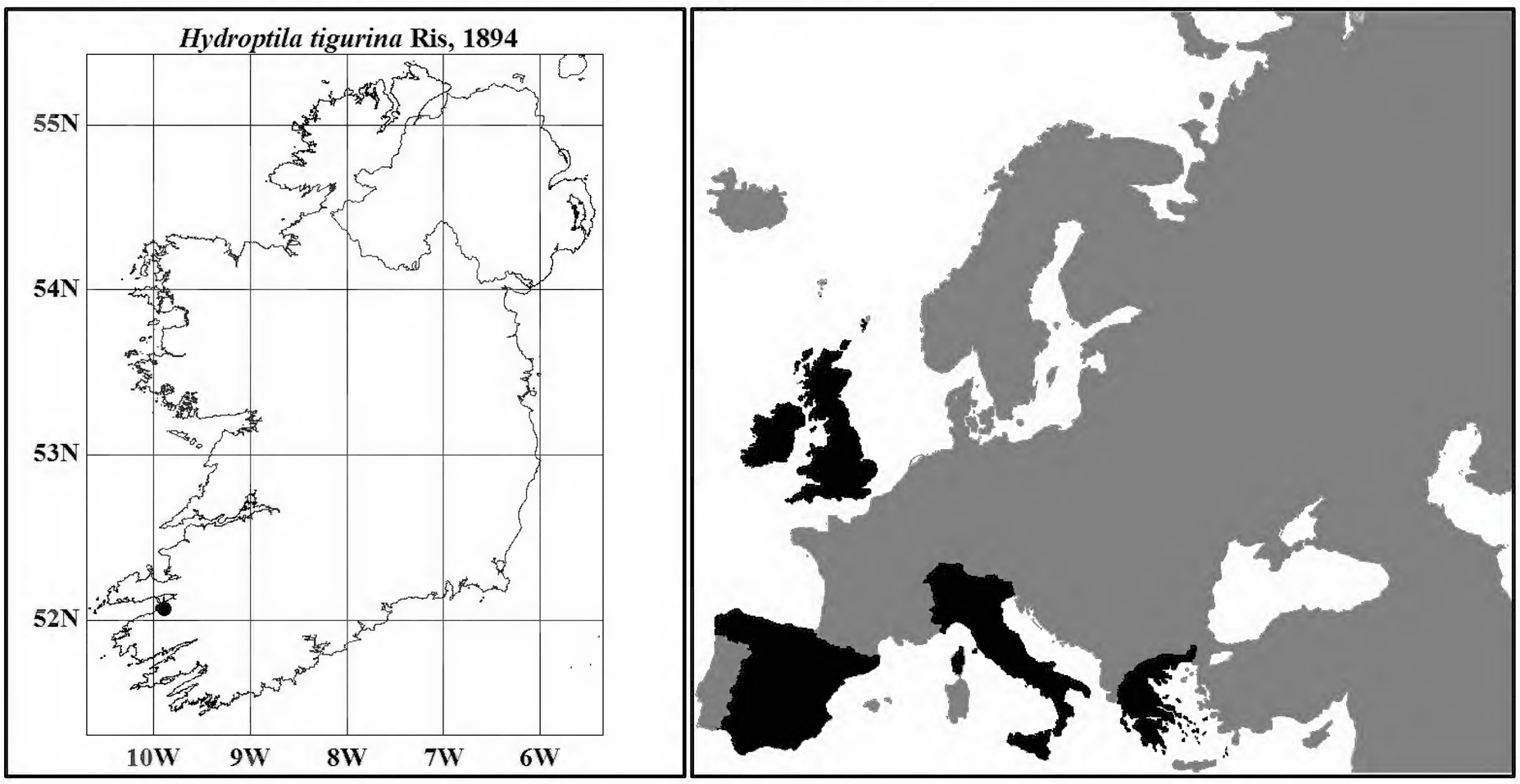
IRELAND: adult 1866, Hardy (BMNH).

CARLOW: R. Barrow (S7237), St Mullins, LTS 4♀♀ 22 July 2015, JPOC/MAOC, det. JPOC; **stream** (S7238), entering R. Barrow, St Mullins, ♂ 26 August 2012, JPOC. **CAVAN: L. Sheelin** (N4686), Crover, ♂ 6 August 1990, JPOC; **Mount Nugent R.** [R. Inny] (N4986), ♂♂♀♀ 5 August 1973, JPOC, conf. JEM (NMI); **R. Blackwater** (N5992), 4♂♂5♀♀ pupae 2 August 1973, JPOC; **R. Erne** (N4293), near Darrin Bridge, 2♂♂ 16 June 1973, JPOC. **CLARE: R. Cloon** (R1656), 2♂♂♀ 29 August 1973, JPOC; **R. Fergus** (R3478), ♂♀ 2 September 1973, JPOC (NMI), (R2688), 5♂♂2♀♀ 1 September 1973, JPOC, conf. JEM (NMI); **R. Shannon** (R7073), ♂♂♀♀ 3 September 1973, JPOC, conf. JEM (NMI). **CORK: Buttevant** (R5408) [R. Awbeg], MVLT ♂♀♀ 17 August 1985, KGMB, conf. JPOC (NMI); **Gearagh** (W3371), Annahala Bridge, 6♂♂3♀♀ 30 May 1985, KGMB, conf. JPOC (NMI). **DUBLIN: Dublin**, 2♂♂ 27 August 1888, JJFXK, det. ECPC (NMS), ♀ 27 August 1888, JJFXK, conf. JPOC (NMI); **R. Liffey** (O1034), Chapelizod, millrace, adult 19 August 1946, JRH, (O0735), Strawberry Beds, ♀ 12 August 2014, 2♂♂ 29 August 2015, JPOC. **KERRY: R. Brick** (stream) (Q8523), 2♂♂ 28 August 1973, JPOC; **R. Flesk** (V9789), ♂ 5 July 1972, JPOC (NMI); **stream** (R0540), entering Galey R., ♂ 29 August 1973, JPOC; **stream** (R0540), near Newtown Sandes, ♂♀♀ 29 August 1973, conf. JEM (NMI). **KILDARE: Rye Water** (O0036), Leixlip, 14 June 1947, JRH; **Straffan** (N9326), fen/canal, ♀ 28 May 1982, JPOC. **KILKENNY: Galmoy** (S3070), ♂♀ 14 June 1985, KGMB. **LIMERICK: R. Shannon** (R5757), St John's Castle, 30♂♂♀ 5 June 1992, (R6663), Castleconnell, LTS 2♂♂ 12-13 July 1973, 29♂♂5♀♀ 3 August 1988 (NMI), JPOC. **LONGFORD: L. Ree** (N0069), Lanesborough, ♂ 14 August 2001, JPOC. **MAYO: Clare Island** (L6985), MT, ♂, SF,

conf. JPOC (NMI); **Westport** (L9984), adult, JJFXK (NMS), ♂, JJFXK, conf. JPOC (NMI). Also green labels 235, 233. **MEATH: R. Blackwater** (N7476), near Kells, 4 ♂♂ 13 June 1976, JPOC (NMI), (N7377), 3♂♂ 13 June 1976, JPOC; **R. Boyne** (O0476), Oldbridge, near small canal, 24 August 1986, JPOC, det. JPOC and PCB (NMI), (N9271), Stackallen, adult 9 September 1946, (O0373), Donore, adult 1 June 1946, JRH. **MONAGHAN: Nuremore** (H8502), pond, ♀ 28 April 2011, JPOC. **OFFALY: Little Brosna** (N6050), Birr, ♂ 8 September 1978, JPOC. **ROSCOMMON: R. Suck** (M8257), above Athleague, 2♂♂ 15 August 2001, JPOC. **TIPPERARY: Gortmore** (M8500) [L. Derg], ♂♀ 18 June 1986, KGMB, det. JPOC (NMI); **Kilmastulla R.** (R6867), (R9173), adults 1976-1977, MAOC; **R. Lingaun** (S4031), Slate Quarries, 7♂♂ 21 August 2000, JPOC. **TYRONE: Ballinderry R.** (H6980), Dunnamore Walk, 2♂♂ 20 September 2014, JPOC/MAOC, det. JPOC (NMI); **Killynure** (H4178), ♂ 27 June 2006, K. Murphy, det. JPOC (NMI). **WATERFORD: Belle Lake** (S6605), ♂ 11 June 1991, JPOC; **R. Blackwater** (X0498), Lismore, ♂♂♀♀ 20 May 1997, JPOC. **WEXFORD: Killoughrim Forest** (S9041), stream, LTS 2♂♂♀ 28 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9739), Enniscorthy, 37♂♂9♀♀ 27 July 2015 (NMI), (S9738), 5♂♂3♀♀ 28 July 2015, all JPOC/MAOC, det. JPOC; **R. Urrin** (S9738), Enniscorthy, ♂ 28 July 2015, JPOC/MAOC, det. JPOC.

19. *Hydroptila tigurina* Ris, 1894

FIGURES 57-58. Known Irish and European distributions of *Hydroptila tigurina*.



Hydroptila tigurina is a very rare species in Ireland, only been found at one site in the River Caragh, County Kerry. The ♀ was described from a pupa taken at the same locality (Marshall, 1979). The river is wide (*circa* 47m) there and the substratum consists of bed-rock, large boulders, coarse gravel and sand. Macrophytes are plentiful O'Connor, 1978b). Only the final larval instar has a case. In addition to Great Britain, the species has been recorded from southern Europe including Greece, Italy and

Spain.

Flight period: no adults collected. Barnard and Ross (2012) give the British flight period as August.

County and 10km squares: Kerry (1/32). The species is only known from one 10km square (1/1019).

Published records

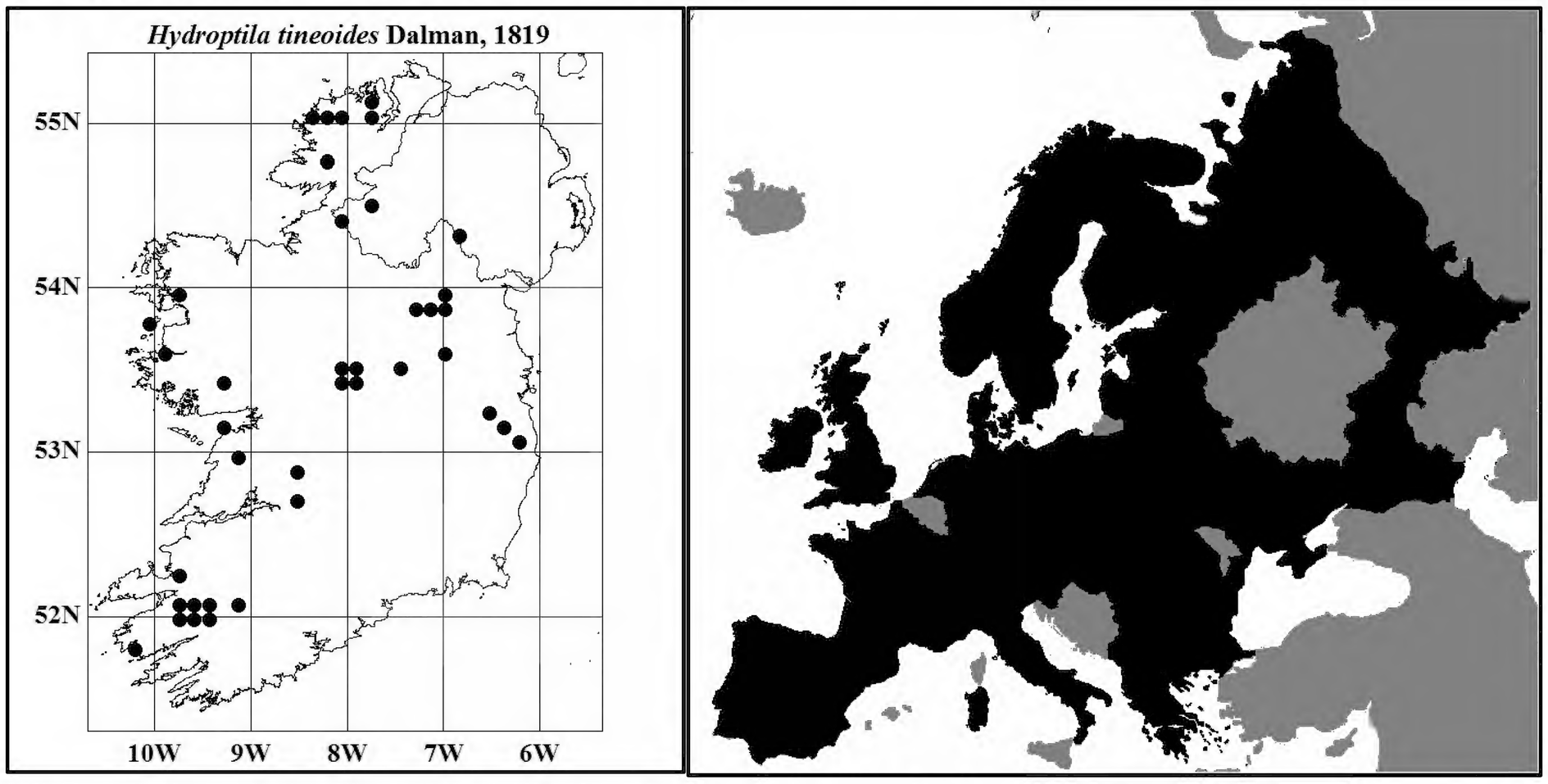
O'Connor, 1978b (**KERRY:** R. Caragh (V7192)). *Marshall, 1978b* (**IRELAND**). *Marshall, 1979* (**KERRY:** R. Caragh (V7192), description of ♀). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7192)). *O'Connor, 1987* (**KERRY:** R. Caragh). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**KERRY**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

KERRY: R. Caragh (V7192), 6♂♂♀ pupae 4 August 1975, JPOC, conf PCB and JEM (BMNH, NMI).

20. *Hydroptila tineoides* Dalman, 1819

FIGURES 59-60. Known Irish and European distributions of *Hydroptila tineoides*.



Hydroptila tineoides is widely distributed in Ireland and is often common. The larvae occur in lakes and rivers. Only the final larval instar has a case. The species is widespread in Europe.

Flight period: May–September (6 May–3 September).

Counties and 10km squares: Cavan, Clare, Cork, Donegal, Fermanagh, Galway, Kerry, Leitrim, Limerick, Mayo, Meath, Monaghan, Roscommon, Westmeath, Wicklow (15/32). The species is known from thirty-nine 10km squares (39/1019).

Published records

King, 1888a as *Hydroptila femoralis* (**KERRY:** Cloghereen (V9787); Denough

[Deenagh] R. (V9792); Gap of Dunloe (V8787); Horses' Glen (V9981); Ross Castle (V9488). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WESTMEATH:** Glasson (N0947); Twy [Breensford] R. (N0943)). *Morton, 1892b* as *Hydroptila femoralis* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *McLachlan, 1903* as *Hydroptila femoralis* (**KERRY:** Killarney). *King and Halbert, 1910* as *Hydroptila femoralis* (**DONEGAL:** Dunleury [Dunlewey] (B9119) and Salt (C1226) Loughs; Gweedore (B8221); R. Lennan [Leannan] (C1521). **KERRY:** Cloghereen (V9787); Deenagh R. (V9792); Gap of Dunloe (V8787); Horse's Glen (V9981); Ross Castle (V9488). **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WESTMEATH:** Glassan [Glasson] (N0947); Twy [Breensford] R. (N0943)). *McCarthy, 1972* (**DONEGAL:** Glen R. (Owenea R.) (G8893)). *McCarthy, 1977* as *Hydroptila teneoides* (**MEATH:** Trimblestown R. (N7262)). *Marshall, 1978b* ((B8-2-) = [B8422], (B9-1-) = [B9119], (C1-2-) = [C1824], (M1-4-) = [M1343], (N0-4-) = [N0146], (N1-4-) = [N1043], (V8-8-) = [V8787], (V9-8-) = [V9686], (V9-9-) = [V9291], (W1-9-) = [W1893] [**CORK**]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H6906), adults. **WICKLOW:** L. Dan (O1502), adults). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881)). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake; Upper Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485); R. Flesk (V9789)). *O'Connor and O'Connor, 2015a* (**FERMANAGH:** Lower L. Erne (H1758)).

Unpublished records and voucher specimens

CAVAN: L. Cuilcagh (N6389), ♂ 20 May 1974, JPOC; **L. Ramor** (N5987), Virginia, 2♂♂ 16 May 2001, JPOC; **L. Sheelin** (N4686), adult 26 August 1946, adult 10 August 1947, adult 19 May 1948, JRH (as *Hydroptila femoralis*), (N4686), Crover, ♂♂ 6 August 1990, JPOC; **L. Sillan** (H6906), ♂♀ 30 August 1972, JPOC (NMI). **CLARE: Caher R.** (M1707), near Ballyvaughan, ♂ 24 May 1971, ECPC, conf. JPOC (NMS); **L. Derg** (R6878), ♂ LT 2-3 September 1973, JPOC (NMI); **L. Inchiquin** (R2789), 10♂♂4♀♀ 4-6 June 1972, LT 2♂♂6♀♀ 31 August-1 September 1973, JPOC. **DONEGAL: Glenveagh National Park** (C0018), near Owenacoo R., MT 20♂♂♀ 20-30 May 1998, MCDS, det. JPOC. **FERMANAGH: Lower L. Erne** (H1758), near White Cairn, Castle Archdale County Park, 31♂♂4♀♀ 13 May 2015, JPOC/MAOC, det. JPOC (NMI). **GALWAY: L. Pollacappal** (L7458), Kylemore Abbey, 3♂♂ 25 July 1982, JPOC (NMI); **Oughterard** (M1343), 3 adults, 3-9 August

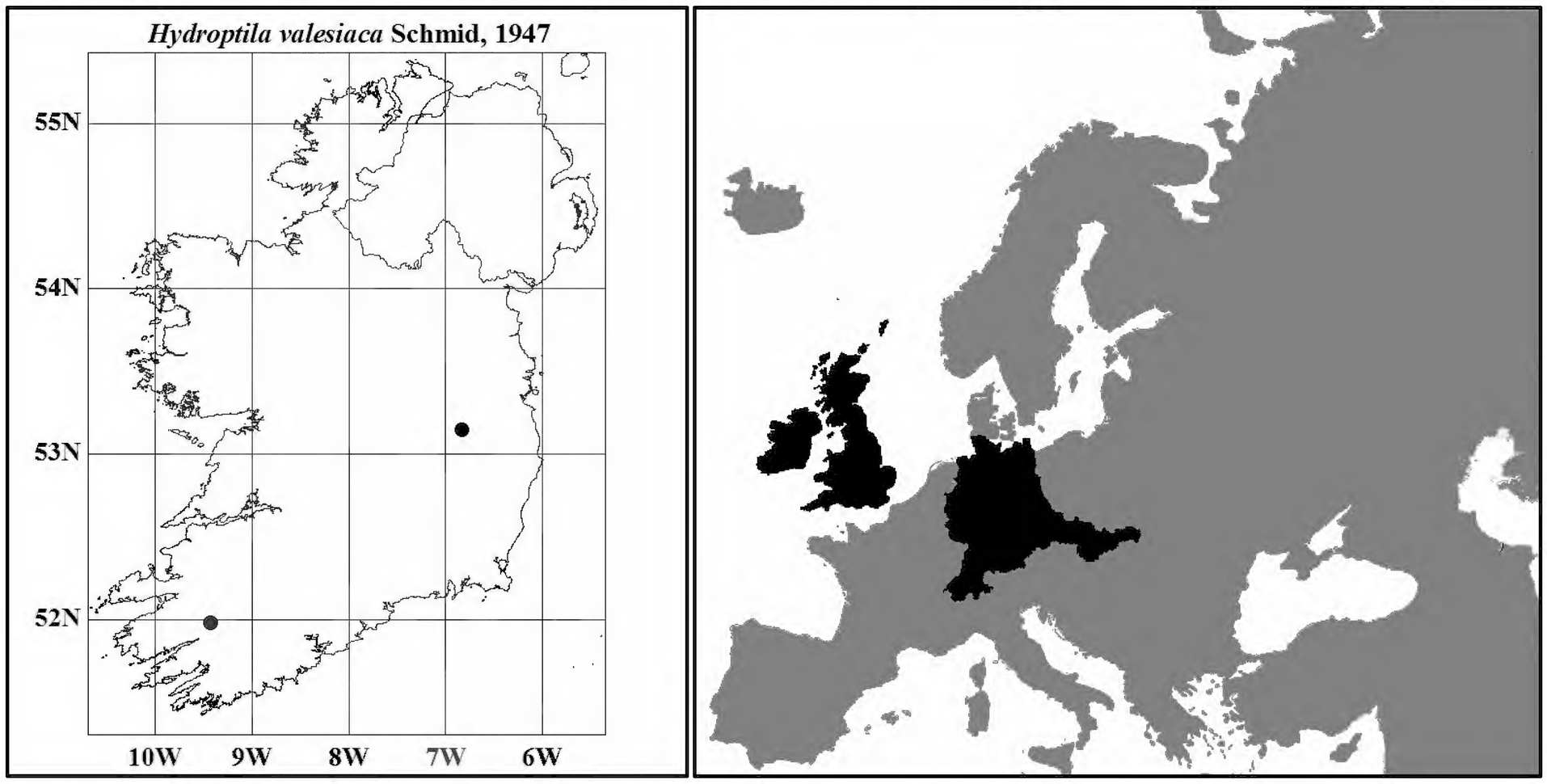
1926, MEM, conf. JPOC (NMI). **KERRY: Dinish** (V9385), Killarney, ♂ 6 May 1987, KGMB, det. JPOC (NMI); **Doolough** (V9585), LT ♂ 26 August 1987, JPOC/MAOC, det. JPOC; **Gaddagh R.** (V8391), ♂♀ 24 August 1973, JPOC, conf. JEM (NMI); **Killarney**, ♂ 11 August 1887, JJFXK (as *Hydroptila femoralis*), conf. JPOC (NMI), adults 12 June 1902, [JJFXK], RMCL (BMNH); **L. Currane** (V5267), 4♂♂2♀♀ 25 August 1973, JPOC; **L. Guitane** (W0285), 20♂♂14♀♀ 3 July 1973, JPOC (NMI); **L. Leane**, (V9291), Golf Course, 3♂♂ 29 May 1974, ♂♂ 1 June 1995, (V9488), Ross Island, ♂ 18 May 1973, JPOC; **L. Looscaunagh** (V8879), 14♂♂ 22 May 2001, JPOC; **Muckross Lake** (V9684), near Torc, ♀ 8 July 1986, (V9485), Colleen Baun, ♂ 20 June & ♂ 23 August 1973, 2♂♂7♀♀ 28 May 1974, all JPOC; **R. Curraheen** (Q7811), ♂♂♀♀ LT 7-8 July 1973, JPOC (NMI); **R. Flesk** (V9789), ♂ LT 24-25 August 1973, JPOC, conf. JEM (NMI); **stream** (V8879), at L. Looscaunagh, 3♂♂ 22 May 2001, JPOC; **Upper Lake, Killarney** (V9282), 2♂♂ 29 May 1974, (V9383), Long Range, ♂ 29 May 1974, JPOC. **LEITRIM: L. Melvin** (G9249), ♂ 7 August 1992, JPOC. **LIMERICK: R. Shannon** (R6663), Castleconnell, 2♂♂ 3 August 1988, JPOC (NMI). **MAYO: Clare Island** (L6985), MT ♂ 13 July 1998, SF, conf. JPOC (NMI); **Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT 20♂♂♀ 30 May-20 June 1997, MCDS, det. JPOC. **MONAGHAN: Glasslough** (H7241), ♂ August 1892, Morton, conf. JPOC (NMS). **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 10b August 1888, JJFXK (as *Hydroptila femoralis*), conf. JPOC (NMI), 4 adults 3-9 August 1926 (as *Hydroptila femoralis*), MEM (BMNH); **L. Ennell** (N4148), Belvidere, ♀ 28 August 1990, JPOC/MAOC, det. JPOC. **WICKLOW: L. Dan** (O1502), ♂ 24 August 1972 (NMI), (O1503), 2♂♂ 24 August 1972, ♂♀ 19 August 1973, (O1504), LT 5♂♂25♀♀ 21-22 June 1973, JPOC; **R. Brittas** (O0218), 4♂♂3♀♀ 6 June & 4♂♂2♀♀ 18 August 1973, JPOC; **R. Liffey** (O0514), Ballysmuttan, ♂ 18 August 1973, JPOC.

21. *Hydroptila valesiaca* Schmid, 1947

Hydroptila valesiaca is a rare species in Ireland. The larvae occur in spring-fed streams and the Irish ones are calcareous in nature. Both Irish sites are in protected areas. Pollardstown Fen, County Kildare, is a Special Area of Conservation while the Blue or Cloghereen Pool lies in the Killarney National Park, County Kerry. Pollardstown Fen is supplied by about forty springs while the Blue Pool is fed by land springs and a stream exits from it. The stream and pool are icy cold even during August (O'Connor and O'Connor, 2013). Only the final larval instar has a case. Outside the British Isles, the species is known from the Czech Republic, Germany, Slovakia and Switzerland.

Flight period: August–September (30 August–11 September). There are only a very small number of Irish adult records. Barnard and Ross (2012) give the British flight period as June–July. **Counties and 10km squares:** Kerry, Kildare (2/32). The species is known from two 10km squares (2/1019).

FIGURES 61-62. Known Irish and European distributions of *Hydroptila valesiaca*.



Published records

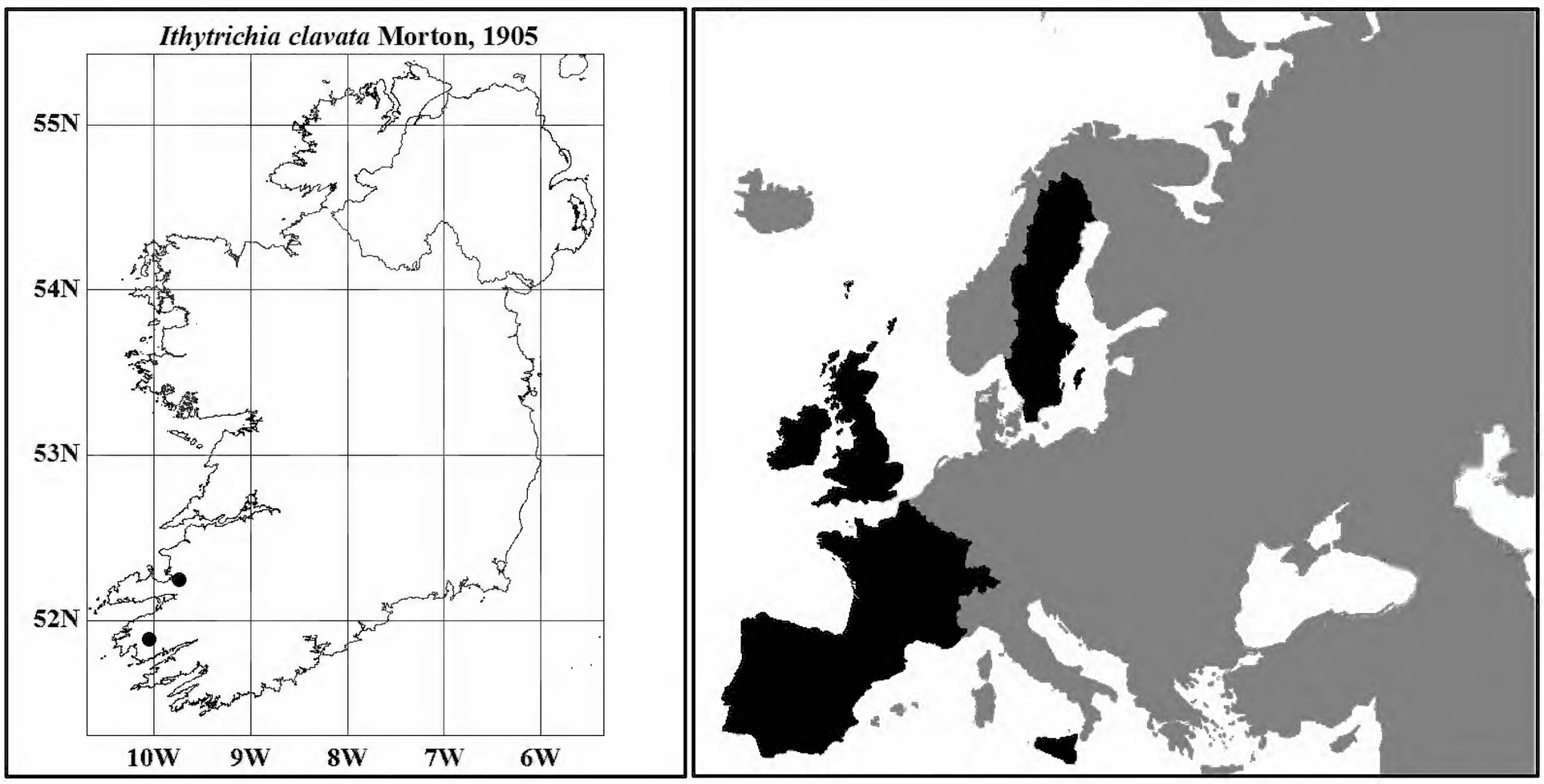
O'Connor and O'Connor, 2013 (**KERRY:** Killarney Blue Pool stream (V9786). **KILDARE:** Pollardstown (Newbridge) Fen stream (N7616) [The dot on the map in the paper for this record was slightly misplaced to the west]).

Unpublished records and voucher specimens

KERRY: Blue Pool (V9786), stream, ♂ 30 August 1987, JPOC (NMI). **KILDARE: Pollardstown** (Newbridge Fen) (N7616), ♂ 11 September 1985, JPOC.

22. *Ithytrichia clavata* Morton, 1905

FIGURES 63-64. Known Irish and European distributions of *Ithytrichia clavata*.



Ithytrichia clavata is a rare species in Ireland where it is associated with two fast flowing small rivers in County Kerry. Only the final larval instar has a case which is made of silk and open at both ends. The case is wide at the posterior end and reduced at the anterior end, resembling a pumpkin-seed. Outside the British Isles, the species is

also known in Europe from France, Portugal, Sicily, Spain, Sweden and Switzerland. Interestingly, *I. clavata* is widely distributed in North America from British Columbia to California, through Texas, Kansas, Oklahoma to Quebec and New Hampshire (Wiggins and Parker, 1997).

Flight period: July (6–8 July). There are only a very small number of Irish adult records. Barnard and Ross (2012) give the British flight period as August.

County and 10km squares: Kerry (1/32). The species is known from two 10km squares (2/1019).

Published records

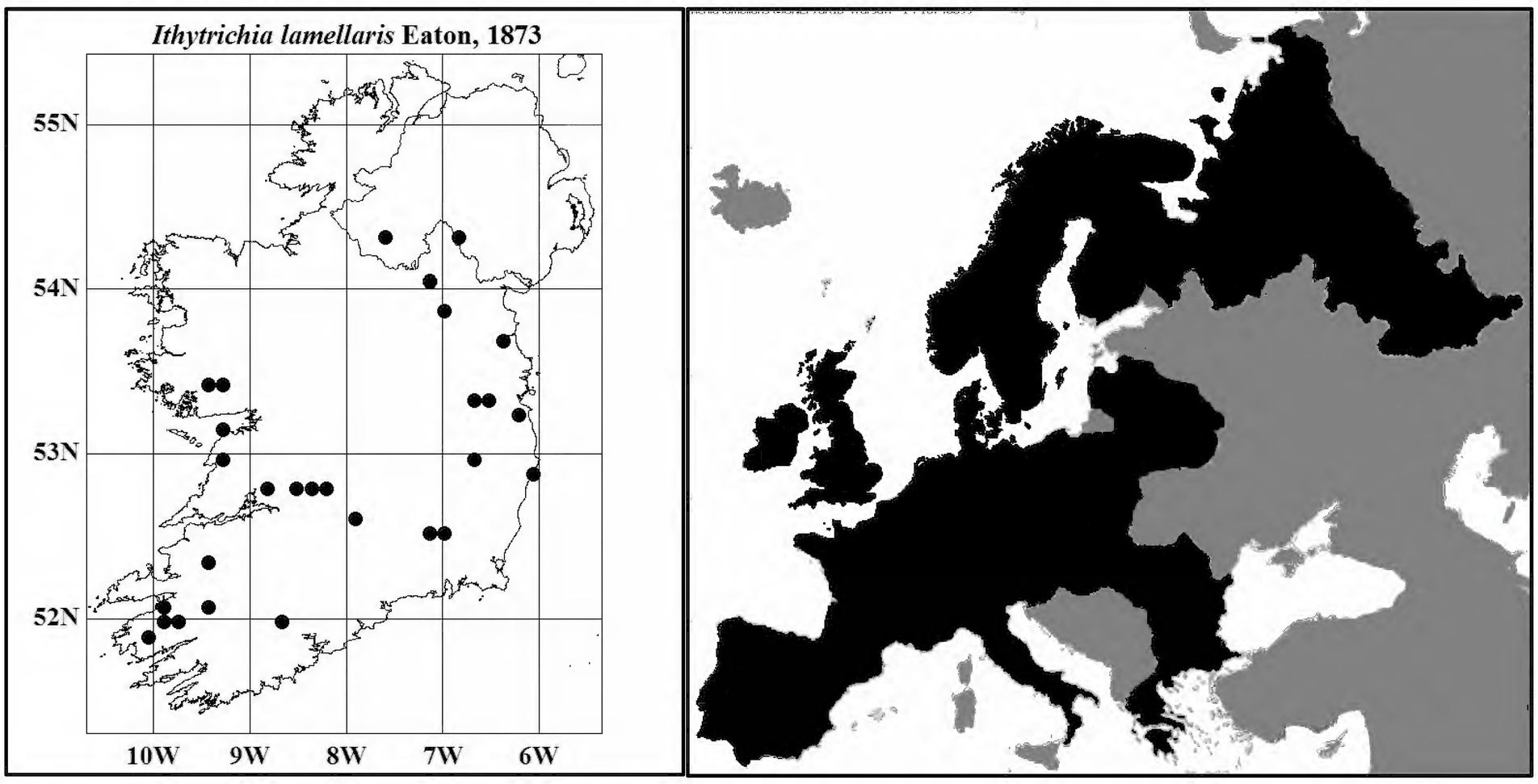
O'Connor, 1982 (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor,1987* (**KERRY:** R. Curraheen [Q7811]). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Nelson, 2012* (**KERRY**). *O'Connor and O'Connor, 2013* (**KERRY:** Curraheen R. (Q7811); L. Derriana (V6072) [R. Cummeragh]). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811)).

Unpublished records and voucher specimens

KERRY: L. Derriana (V6072), ♂ 6 July 1973, JPOC (NMI); **R. Curraheen** (Q7811), 2♂♂2♀♀ LT 7-8 July 1973, JPOC (NMI).

23. *Ithytrichia lamellaris* Eaton, 1873

FIGURES 65-66. Known Irish and European distributions of *Ithytrichia lamellaris*.



Ithytrichia lamellaris is a widely distributed and often common species in Ireland. The larvae occur in flowing water including rivers, streams and small canals where they feed on diatoms. Only the final larval instar has a case which is similar to that of *I. clavata*. *I. lamellaris* is widespread in Europe.

Flight period: June–October (16 June–3 October).

Counties and 10km squares: Carlow, Cavan, Clare, Cork, Dublin, Fermanagh,

Galway, Kerry, Kildare, Kilkenny, Limerick, Meath, Monaghan, Tipperary, Wicklow (15/32). The species is known from twenty-nine 10km squares (29/1019).

Published records

Morton, 1892b (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* (**MONAGHAN:** Glaslough (R. Blackwater) (H7242)). *Mosely, 1930* (**GALWAY:** Oughterard (M1343)). *Frost, 1939* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Frost and Went, 1940* (**KILDARE:** Straffan (N9229)). *Frost, 1942* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Fahy, 1972a* (unsafe larval identification (Wallace, pers. comm.)). *Fahy, 1972b* (unsafe larval identification (Wallace, pers. comm.)). *Clabby and Bracken, 1976* as *Ithytricia* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *O'Connor, 1978b* (**KERRY:** R. Caragh (V7192)). *Marshall, 1978b* ((H7-4-) = [H7241], (M1-4-) = [M1343], (N6-9-) = [N6893] [Barora R.], (N9-2-) = [N9229]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7281), (V7102)). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** R. Flesk (V9789); R. Inny (V5572)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Arney R. (H2336)).

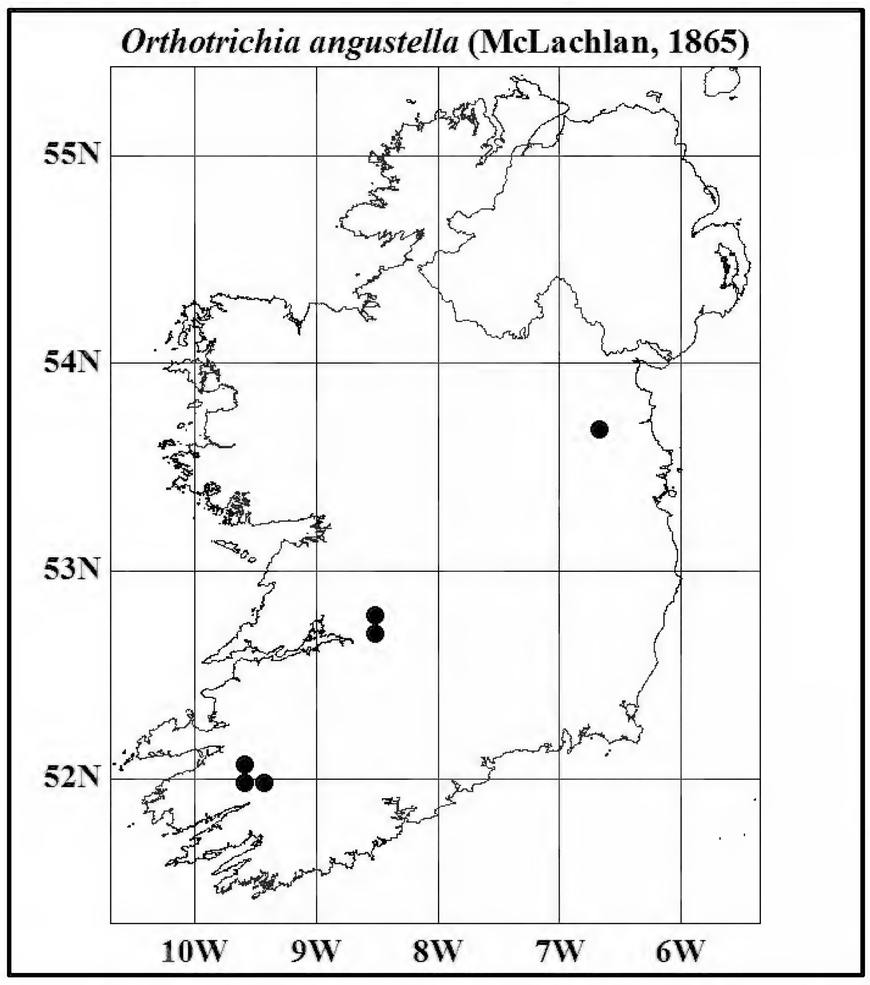
Unpublished records and voucher specimens

CARLOW: R. Barrow (S7237), St Mullins, LTS ♂ 22 July 2015, JPOC/MAOC, det. JPOC, (S7043), Tinnahinch, dead inside a light-fitting on a bridge, ♂ 21 August 1996, JPOC. **CAVAN: Barora R.** (N6893), 16♂♂7♀♀ 31 August 1972, JPOC (NMI); **R. Annalee** (H5411), ♂3♀♀ 3 October 1972, JPOC (NMI); **R. Laragh** (H5210), LT ♂21♀♀ 2-3 August 1973, JPOC. **CLARE: Caher R.** (M1608), Burren, 2♂♂3♀♀ 17 July 1981, JPOC; **R. Cullenagh** (R1388), ♂ 9-10 July 1973, JPOC; **R. Denlagh** (R1191), ♂2♀♀ 30 August 1973, JPOC; **Sixmilebridge** (R4767) [Rally R.], north of, 2♂♂7♀♀ 6 August 1986, CM/OSF (SINMNH). **CORK: R. Shournagh** (W5380), ♂ pupa, MM, det. JPOC (NMI). **DUBLIN:** Lucan (O0335), ♂ 28 August 1888, [JJFXK], det. MEM, ♂ 29 August 1888, [JJFXK], det. JPOC (HMAG). **FERMANAGH: Arney R.** (H2336), Old Drumane Bridge, ♂ 26 August 2014, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Loch an Droichid outflow** (M0542), Derryerglinna, LT 7♀♀ 13 September 2014, MG/CC, det. MG. **KERRY: R. Flesk** (V9789), ♀ LT 24-25 August 1973, JPOC, conf. JEM (NMI). **KILKENNY: R. Nore** (S6337), Inistioge, ♂ 16 June 1991, JPOC. **LIMERICK: R. Shannon** (R6767), near Castleconnell, ♂♀ LT 12-13 July 1973, JPOC (NMI). **MEATH: small canal** (O0476), Oldbridge, near the R. Boyne, 4♀♀ 24 August 1986, JPOC, det. JPOC and PCB (NMI). **MONAGHAN: Glasslough** (H7241), ♂ August 1892, conf. JPOC, Morton Coll. (NMS). **TIPPERARY: Cabragh Bog** (S1054), MVLT ♂2♀♀ 28 June

1994, KGMB, det. JPOC (NMI); **Cahir** (Ballybrado House) (R0620), ♀ 14 July 1986, KGMB, det. JPOC (NMI); **Kilmastulla R.** (R8172), (R8072), (R7269), (R7169), (R9173), adults 1976-1977, MAOC. **WICKLOW: Glencullen R.** (O1919), ♂♀ 22 July 1973, JPOC; **Potters R.** (T2985), ♂ 19 September 1973, JPOC; **R. Slaney** (S8892), LT 86♂♂87♀♀ 24-25 July 1973, JPOC.

24. *Orthotrichia angustella* (McLachlan, 1865)

FIGURES 67-68. Known Irish and European distributions of *Orthotrichia angustella*.



Orthotrichia angustella is a local and rare Irish species. The larvae occur in lakes and large rivers. Only the final larval instar has a case. The two Irish species have purse shaped cases which are not laterally compressed. Composed of silk, there are two conspicuous ridges on each side of the mid-dorsal line. Larvae of *Orthotrichia* live in submerged beds of aquatic plants where the pointed labrum enables them to puncture and feed on the contents of more robust algal filaments than the larvae of other genera could (Wiggins, 1977). The species is widespread in Europe.

Flight period: June–September (25 June–6 September).

Counties and 10km squares: Clare, Kerry, Limerick, Meath (4/32). The species is known from six 10km squares (6/1019).

Published records

O'Connor, 1978a (**CLARE**. **KERRY**). *Marshall, 1978a* (**KERRY**). *Marshall, 1978b* ((V9-9-) = [V9291]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake). *O'Connor, 1987* (**CLARE**. **KERRY**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Bracken, 1998* (**KERRY:** Killarney). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**CLARE**. **KERRY**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough

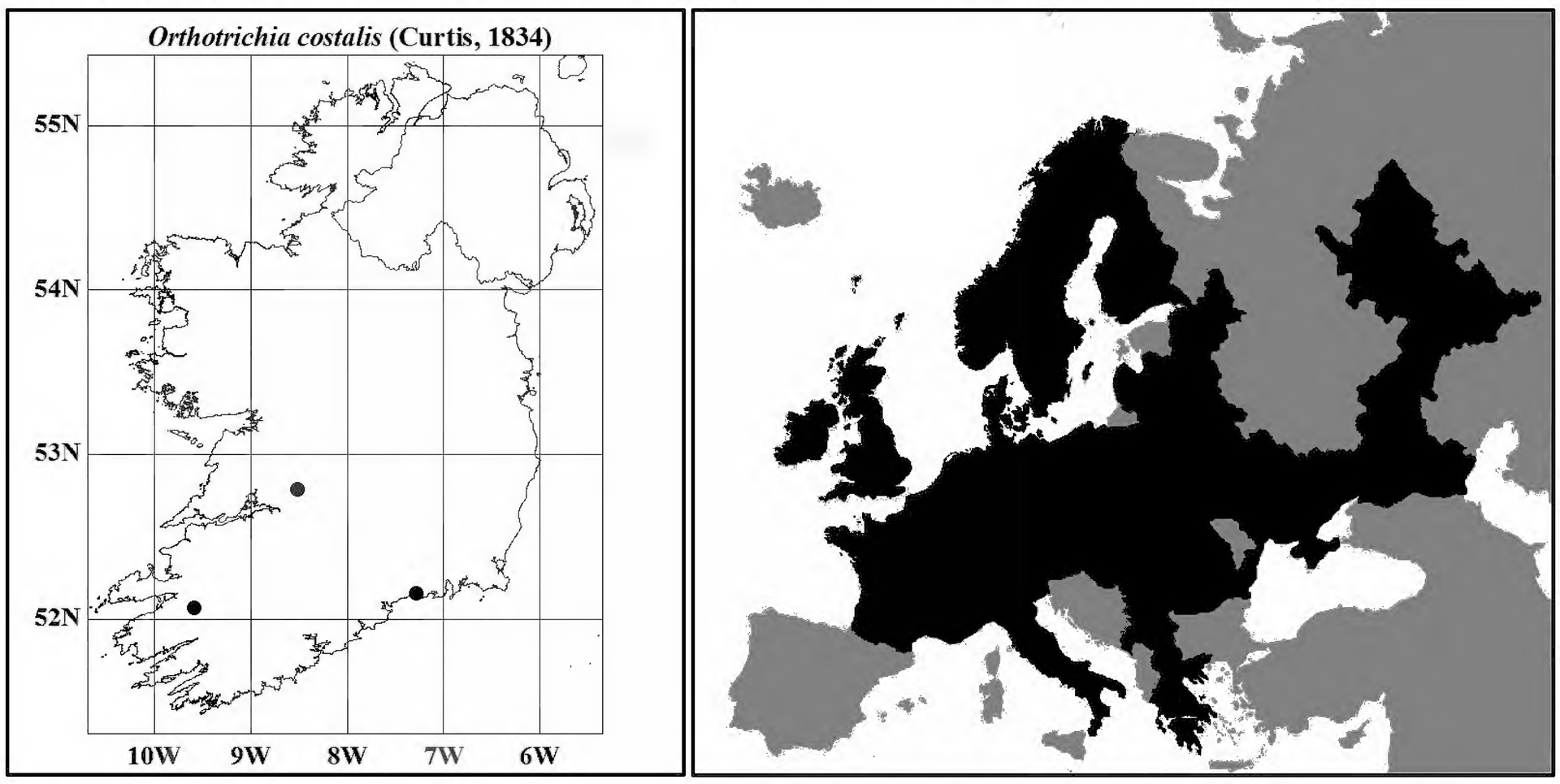
(V9585); Muckross Lake (V9485)).

Unpublished records and voucher specimens

IRELAND: adult 1886, Hardy (BMNH).
CLARE: R. Shannon (R6767), near O'Briensbridge, ♂♂ 12 July 1973, JPOC (NMI).
KERRY: Killarney, adults 25a June & 26 June 1887, [JJFXK], det. MEM, conf. JPOC (BMNH); **L. Guitane** (W0285), ♂ 3 July 1973, JPOC (NMI); **L Leane** (V9686), 12♂♂4♀♀ 5 September 1972 (NMI), 2♂♂4♀♀ 23 August 1973, JPOC.
LIMERICK: R. Shannon (R6663), Castleconnell, LT 4♂♂3♀♀ 3 August 1988, JPOC (NMI). **MEATH: R. Boyne** (N9271), Stackallen, adult 6 September 1946, JRH.

25. *Orthotrichia costalis* (Curtis, 1834)

FIGURES 69-70. Known Irish and European distributions of *Orthotrichia costalis*.



Orthotrichia costalis is a local Irish species. The larvae occur in lakes, ponds and rivers. Only the final larval instar has a case. The species is widespread in Europe but has not been recorded from the Iberian Peninsula.

Flight period: June–July (19 June–19 July). There are only a small number of Irish adult records. Barnard and Ross (2012) give the British flight period as May–September.

Counties and 10km squares: Clare, Kerry, Tipperary, Waterford (4/32). The species is known from three 10km squares (3/1019).

Published records

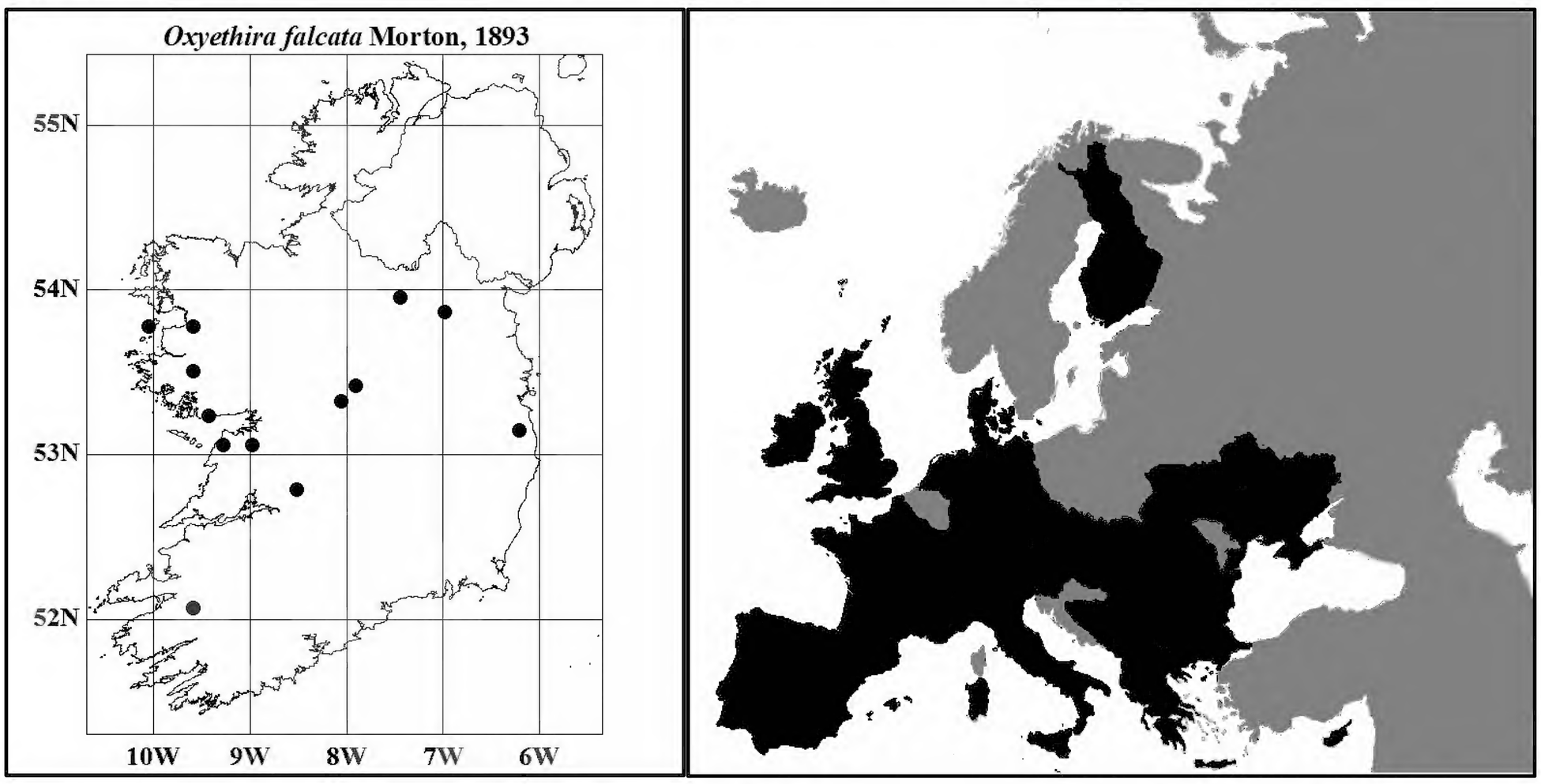
O'Connor, 1978a (**CLARE**). *Marshall, 1978a* (**IRELAND**). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Wise, 1984* (**KERRY:** L. Leane). *O'Connor, 1987* (**CLARE**. **KERRY**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Bracken, 1998* (**KERRY:** Killarney). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**CLARE**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

CLARE: pond (R6566), 4♂♂6♀♀ 12 July 1973, JPOC (NMI). **KERRY: L. Leane** (V9488), Ross Bay, Eckmann grab ♂ pupa 1977, PS, det. MAOC, conf. JPOC. **TIPPERARY: Kilmastulla R.** (R6867), adults 1976-1977, MAOC. **WATERFORD: Ballin L.** (S4503), near Kill, ♂♀♀ 19 July 1987 (NMI), ♂ 5 July 1988, ♂ 19 June 1991, JPOC; **Ballyscanlan L.** (S5403), 8♂♂4♀♀ 8 July 2014, JPOC/MAOC, det. JPOC.

26. *Oxyethira falcata* Morton, 1893

FIGURES 71-72. Known Irish and European distributions of *Oxyethira falcata*.



Oxyethira falcata is widely distributed but there are no records from large areas of Ireland. The larvae occur in lakes, rivers and streams. Adults have also been taken at stagnant pools in a marsh. Only the final larval instar has a case. *Oxyethira* species have cases made completely of silk and resembling a compressed flask. They frequent submerged beds of aquatic plants where they feed on filamentous algae by puncturing the cells and eating the contents. Diatoms and entire filaments were also found in larval guts (Wiggins, 1977). The species is widespread but unrecorded from most of eastern and northern Europe.

Flight period: May–October (21 May–4 October).

Counties and 10km squares: Cavan, Clare, Galway, Kerry, Mayo, Offaly, Tipperary, Westmeath, Wicklow (9/32). The species is known from thirteen 10km squares (13/1019).

Published records

Mosely, 1930 (**GALWAY:** Inverin (M0822)). *Kimmins, 1958* (**GALWAY**. **MAYO**). *Hickin, 1967* (**GALWAY**. **MAYO**). *Marshall, 1978a* (**BRITISH ISLES**). *Marshall, 1978b* ((L9-4-) = [L9748], (L9-5-) = [L9950], (L9-8-) = [L9581], (M0-2-) = (M0822), (M0-8-) = [M0080]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987*

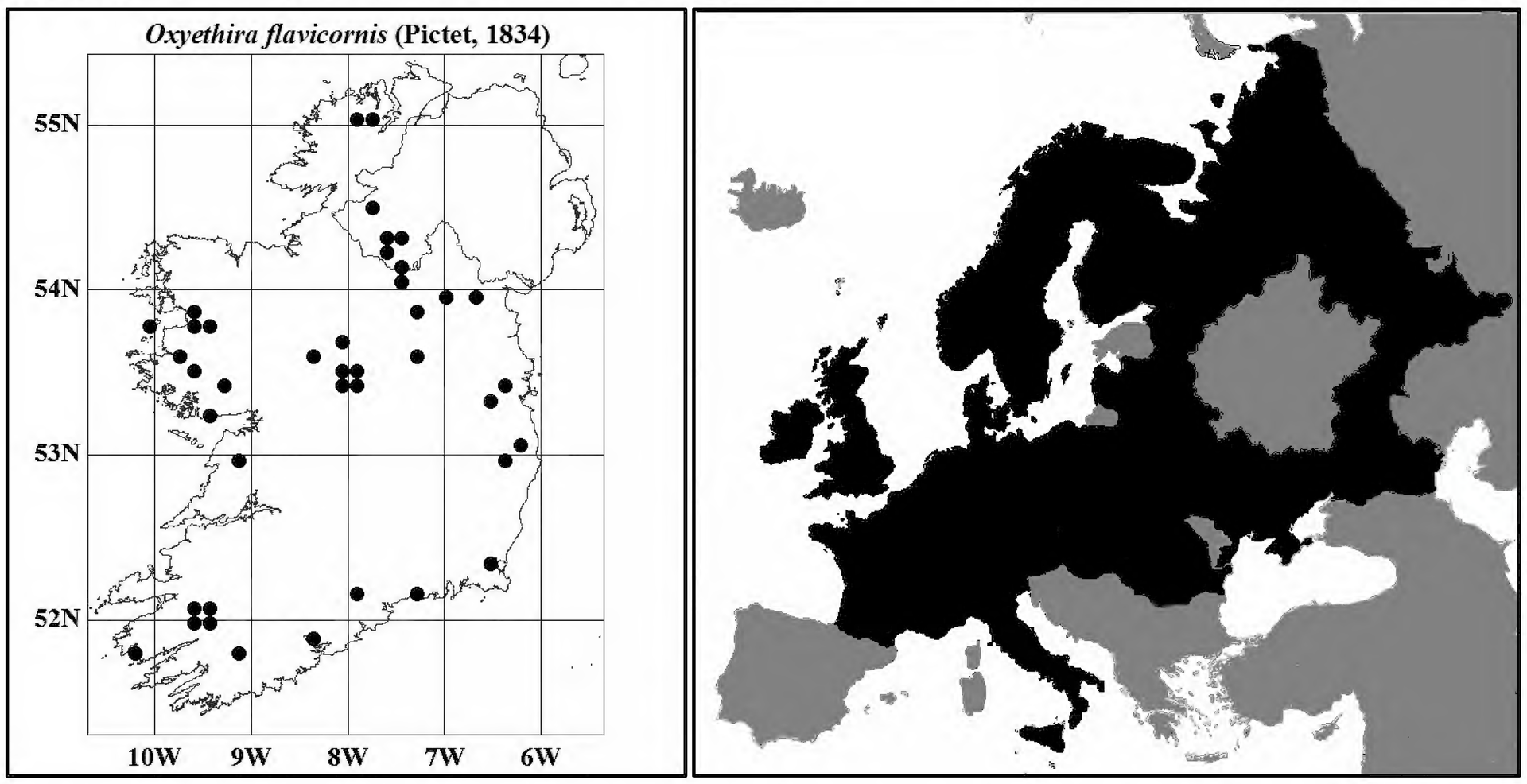
(**CAVAN**. **CLARE**. **GALWAY**. **MAYO**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**GALWAY**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

CAVAN: Barora R. (N6889), ♂♂ 4 October 1972, JPOC (NMI); **small stream** (N3996), near Bellananagh, ♂ 5 August 1973, JPOC (NMI). **CLARE: L. Bunny** (R3796), ♂ 21 May 1985, JPOC/MAOC, det. JPOC; **stream** (M1602), Cooleabeg, 2♂♂ 23 May 1985, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Inverin** (M0822), adult 26 August-6 September 1929, MEM (BMNH). **KERRY: Gap of Dunloe** (V8787), lakes, ♂ 10 July 1986, JPOC. **MAYO: Clare Island** (L6985), MT 3♂♂ 11 June 1998, SF, conf. JPOC (NMI); **Westport** (L9984), ♂, JJFXK, det. KJM, conf. JPOC (NMS). **OFFALY: Clorhane** [R. Shannon] (M9828), D-Vac. ♂ 21 May 1987, KGMB (NMI). **TIPPERARY: Kilmastulla R.** (R6867), adults 1976-1977, MAOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 18 August 1888, JJFXK, det. JKM, conf. JPOC (NMS), ♂ 1A August 1888, [JJFXK], det. JPOC (HMAG). **WICKLOW: Calary Lower** (O2312), stagnant pools in a marsh, ♂♂♀ 22 August 1988, JPOC (NMI).

27. *Oxyethira flavicornis* (Pictet, 1834)

FIGURES 73-74. Known Irish and European distributions of *Oxyethira flavicornis*.



Oxyethira flavicornis is widely distributed in Ireland and adults often occur in large numbers. The larvae live in bogs, lakes, ponds and reservoirs. There are a few records from rivers. Only the final larval instar has a case. The species is widespread in Europe but unrecorded from the Iberian Peninsula.

Flight period: April–September (28 April–13 September).

Counties and 10km squares: Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Longford, Mayo, Monaghan, Roscommon, Waterford, Westmeath, Wexford, Wicklow (16/32). The species is known from forty-one 10km squares (41/1019).

Published records

King, 1888a as *Oxyethira costalis* (**DUBLIN:** Lucan (O0335); Tolka (O1337). **GALWAY:** Castlekirk (M1244); Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Cloghereen (V9787); Coppagh Glen (W0382); Denough [Deenagh] R. (V9792); Gap of Dunloe (V8787); Horses' Glen (V9981); Ross Castle (V9488). **MAYO:** Ballin (L9987), Cushinsheen (M0482), Knappagh [Knappaghbeg] (M0080), Mount Brown [Kinlooey] (M0381) and Prospect (L9581) Laoghs. **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]; Yew Point (N0146) [L. Ree]. **WESTMEATH:** Glasson (N0947); Shannon Side (N0243); Twy [Breensford] R. (N0943)). *McLachlan, 1903* as *Oxyethira costalis* (**KERRY:** Killarney). *King and Halbert, 1910* as *Oxyethira costalis* (**DONEGAL:** Loughs Fern (C1824) and Keel (C1524). **DUBLIN:** Lucan (O0335); Tolka (O1337). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Maumwee [Manwee] L. (L9748). **KERRY:** Cloghereen (V9787); Coppagh Glen (W0382); Deenagh R. (V9792); Gap of Dunloe (V8787); Horse's Glen (V9981); Ross Castle (V9488). **MAYO:** Ballin (L9987), Cushinsheaun (M0482), Knappagh [Knappaghbeg] (M0080), Mount Brown [Kinlooey] (M0381) and Prospect (L9581) Loughs. **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]; Yew Point (N0146) [L. Ree]. **WESTMEATH:** Glassan [Glasson] (N0947); Shannon Side (N0243); Twy [Breensford] R. (N0943)). *Halbert, 1912* as *Oxyethira costalis* (**MAYO:** Westport (L9984)). *Mosely, 1927* as *Oxyethira costalis* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Oxyethira costalis* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Oxyethira costalis* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Kimmins, 1932* as *Oxyethira costalis* (**GALWAY:** Leenane [Leenaun] (L8762)). *Kimmins, 1958* as *Oxyethira costalis* (**DONEGAL**. **DUBLIN**. **GALWAY**. **KERRY**. **MAYO**. **WESTMEATH**). *Hickin, 1967* (**DONEGAL**. **DUBLIN**. **GALWAY**. **KERRY**. **MAYO**. **WESTMEATH**). *Speight, 1977* as *Oxyethira costalis* (**ROSCOMMON:** Yew Pt. [Point] (N0146)). *Marshall, 1978a* (**IRELAND**). *Marshall, 1978b* ((C1-2-) = [C1824], (L6-8-) = [L6884], (L8-6-) = [L8367, Doo L.], (L9-4-) = [L9748], (L9-5-) = [L9950], (L9-8-) = [L9581], (M0-2-) = (M0822), (M0-8-) = [M0080], (M1-4-) = [M1343], (N0-4-) = [N0146], (N1-4-) = [N1043], (O0-3-) = [O0235], (O1-3-) = [O1337, Tolka R.], (V8-8-) = [V8787], (V9-8-) = [V9686], (V9-9-) = [V9291], (W0-9-) = [W0093], (X1-9-) = [X1198]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H6906), adults. **WICKLOW:** L. Dan (O1502), adults). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake; Upper Lake [Killarney]). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998*

(**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685); Upper Lake (V9383)). *O'Connor and Bond, 2014* (**FERMANAGH:** Derryvore Townland near Crom (H3423)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Lower L. Erne (H1758); Mill L. (H2438); R. Erne (H2637); Upper L. Erne (H2339), (H2731)).

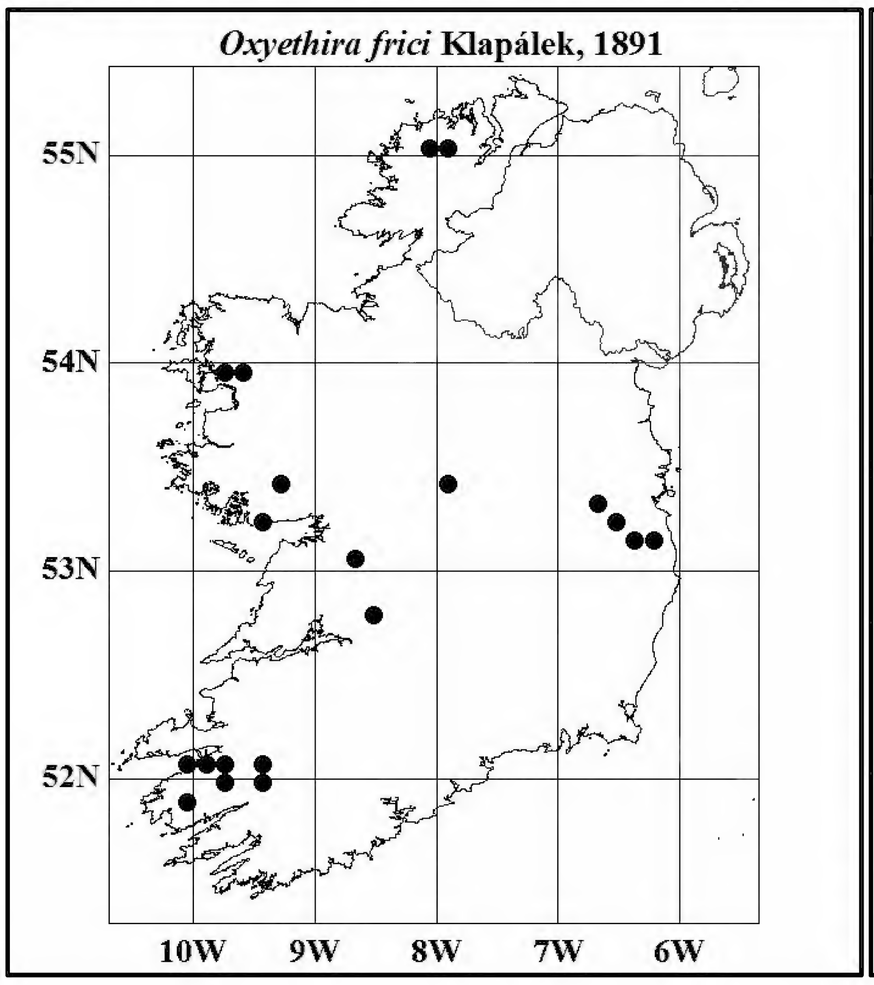
Unpublished records and voucher specimens

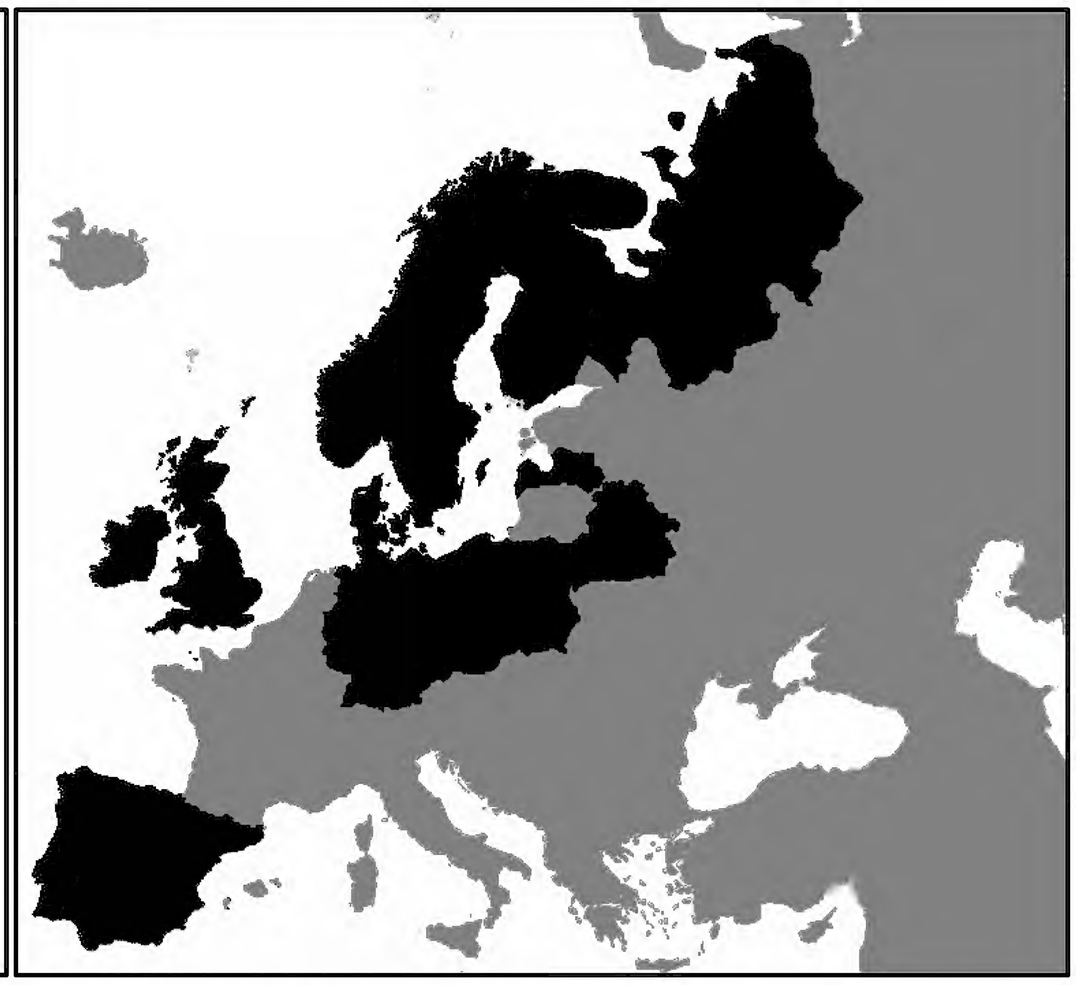
CAVAN: Drummany L. (H3712), 3♂♂2♀♀ 4 August 1973, JPOC; **L. Sheelin** (N4686), adult 26 August 1946, JRH (as *Oxyethira costalis*), IETS ♂ 5 August & ♂♀ 31 August 1971, IFT, det. JPOC; **L. Sillan** (H6906), ♂ 11 July 1972, JPOC (NMI). **CLARE: L. Inchiquin** (R2789), 4♂♂♀ 4-6 June 1972, LT 10♂♂6♀♀ 31 August-1 September 1973, JPOC. **CORK: Fota Wildlife Park** (W7871), Rothamstead Insect Trap ♀ 28 July 1982, KGMB, det. JPOC (NMI); **L. Allua** (W1965), ♂ 30 May 1985, KGMB, det. JPOC (NMI). **DONEGAL: Glenveagh National Park** (C0423), MVLT ♂♂ 11 August 1984, KGMB, det. JPOC (NMI), (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT 5♂♂ 10-30 July 1998, MCDS, det. JPOC. **FERMANAGH: Crom Estate** (H3524), ♀ 20 September 2013, Vincent McLoughlin, det. JPOC (NMI); **Mill L.** (H2438), near Bellanaleck, LT 30♂♂ 26 August 2014, JPOC/MAOC, det. JPOC (NMI); **Munmurray Bog** (H3943), ♀ 17 September 2013, Vincent McLoughlin, det. JPOC (NMI). **GALWAY: Hollygrove Lake** [Ballaghdacker L.] (M7857), ♂♂♀♀ 8 August 2001, JPOC; **Leenane** [Leenaun] (L8762), Connemara, adult 30 August 1930 (as *Oxyethira costalis*), MEM (BMNH); **L. Corrib** (M1146), Upper, ♂ 8 June 1980, BC, conf. JPOC. **KERRY: Doolough** (V9585), ♂♂♀♀ 26 August 1987, JPOC/MAOC, det. JPOC; **Gap of Dunloe** (V8787), lakes, ♂♂♀♀ 10 July 1986, JPOC; **Killarney**, adult 12 June 1902, [JJFXK] (BMNH), ♂ 11 July 1887, JJFXK, conf. JPOC (NMI); **L. Leane** (V9291), Golf Course, ♂ 26 August 1987 (NMI), ♂♂ 1 June 1995, JPOC, Ross Castle Island (V9488), ♂ 17 May 1995, KGMB (NMI); **L. Looscaunagh** (V8879), 24♂♂ 22 May 2001, JPOC; **Muckross Lake** (V9385), Dinish, ♂ 22 May 2001, (V9684), near Torc, ♀ 8 July 1986, JPOC, (V9685), Dundag Bay, IETS ♂19♀♀ 29 May & ♀ 13 September 1973, UCD, det. JPOC; **pond** (V9080), 2♂♂12♀♀ 4 July 1973, JPOC; **Upper Lake, Killarney** (V9383), Long Range, 2♂♂ 29 May 1974, JPOC. **LONGFORD: L. Ree** (N0069), Lanesborough, ♂ 14 August 2001, JPOC. **MAYO: Clare Island** (L6985), MT ♂ 13 July 1998, SF, conf. JPOC (NMI); **Westport** (L9984), ♂, JJFXK, conf. JPOC (NMI). **MONAGHAN: Nuremore** (H8502), pond, ♂ 28 April 2011, JPOC. **WATERFORD: Ballyscanlan L.** (S5403), 4♂♂ 8 July 2014, JPOC/MAOC, det. JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 10b August 1888, JJFXK, conf. JPOC (NMI); **L. Derravaragh** (N4662), 2♂♂ 18 August 1978, JPOC. **WEXFORD: near Whitestown** (T0517), ponds, ♂ 9 June 1978, JPOC/MAOC, det. JPOC. **WICKLOW: L. Dan** (O1502), ♂ 1 August 1972 (NMI),

♂6♀♀ 19 August & LT ♂♀♀ 21-22 June 1973, JPOC, conf. JEM (NMI); **Upper Lake, Glendalough** (T1096), 2♂♂3♀♀, JPOC; **Vartry Reservoir** (O1903), 3♂♂6♀♀ 24 August 1972, 4♂♂24♀♀ 6 June & LT 30♂♂154♀♀ 19-20 August 1973, JPOC.

28. *Oxyethira frici* Klapálek, 1891

FIGURES 75-76. Known Irish and European distributions of *Oxyethira frici*.





Oxyethira frici is widely distributed but unrecorded from large areas of Ireland. The larvae occur in rivers. Only the final larval instar has a case. Adults have been found beside pools in a marsh. The species has a discontinuous European distribution.

Flight period: May–October (20/30 May–10 October).

Counties and 10km squares: Cavan, Clare, Donegal, Galway, Kerry, Mayo, Tipperary, Westmeath, Wicklow (9/32). The species is known from twenty 10km squares (20/1019).

Published records

Mosely, 1927 (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Frost, 1942* (**WICKLOW:** Ballysmuttan (O0514) [R. Liffey], pupae). *Kimmins, 1958* (**GALWAY**). *Hickin, 1967* (**GALWAY**). *Fahy, 1972a* (**MAYO:** (F9505)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Marshall, 1978a* (**IRELAND**). *Marshall, 1978b* ((M0-2-) = (M0822), (M1-4-) = [M1343], (N9-2-) = [N9229]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7192)). *O'Connor, 1987* (**CAVAN**. **CLARE**. **GALWAY**. **KERRY**. **MAYO**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *O'Connor and Nelson, 2012* (**GALWAY**). *Barnard and Ross,*

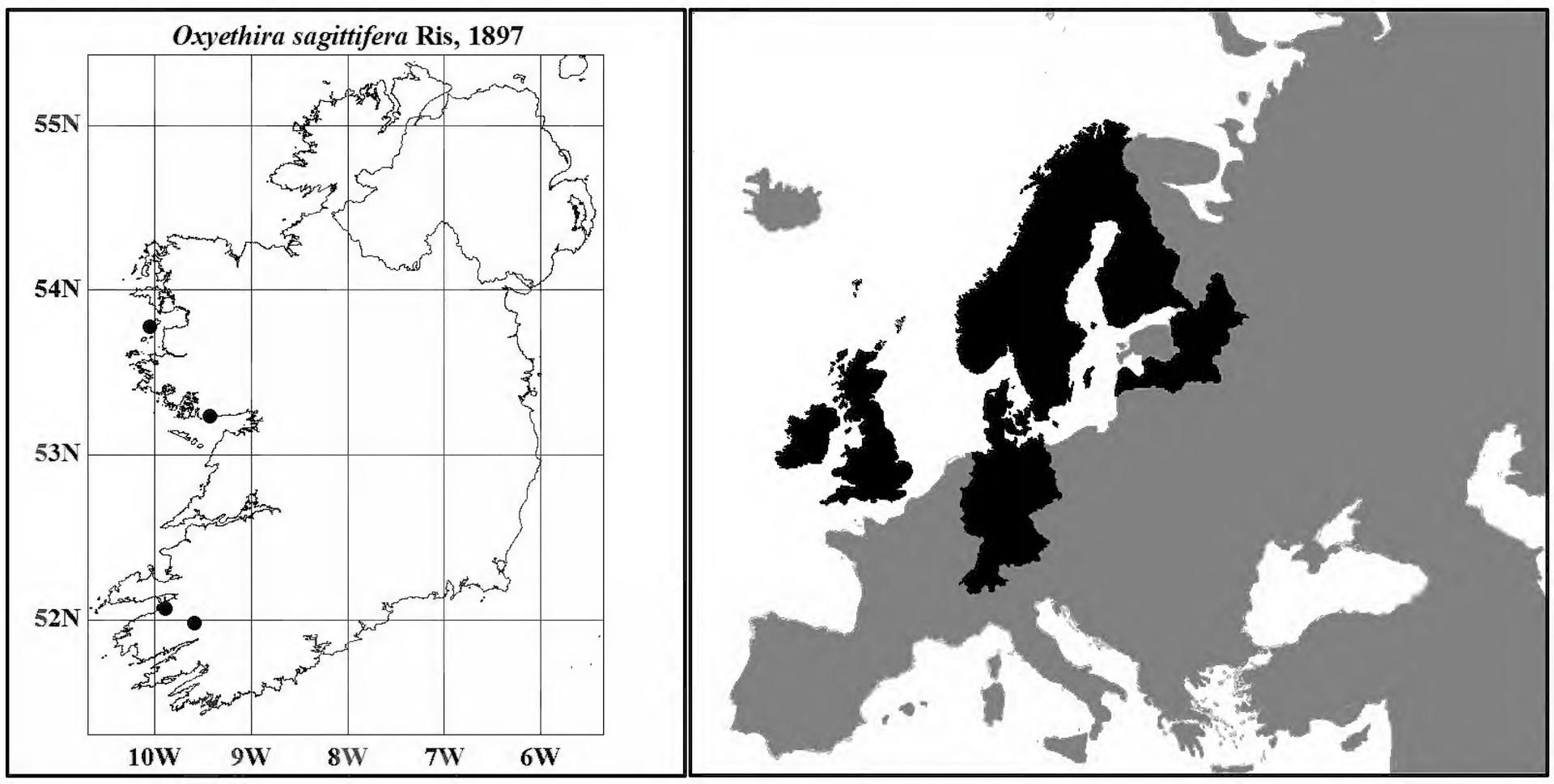
2012 (**IRELAND**). *O'Connor, 2013b* (**KERRY:** R. Behy (V6589); R. Flesk (V9789); R. Inny (V5572)).

Unpublished records and voucher specimens

CLARE: R. Bleach (R6096), LT 2♂♂21♀♀ 3-4 September 1973, JPOC. **DONEGAL: Glenveagh National Park** (C0018), near Owenacoo R., MT 20♂♂ 20-30 May 1998, MCDS, det. JPOC (NMI), (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT 2♂♂ 10-30 July 1998, MCDS, det. JPOC. **GALWAY: Inverin** (M0822), ♂♂ 17 July-2 August 1926, MEM (BMNH, RSM); **Oughterard** (M1343), adult 3-9 August 1926, MEM (BMNH). **KERRY: Carrauntoohil** [Carrantuohill] (V8184), Carrantose, adult 10 June 1913, CJM, det. JRAG (IM) (per IDW); **Derriana L.** (V6274), stream near, ♂ 1-13 July 1979, JPOC (NMI); **R. Caragh** (V7881), 2♂♂ 2-3 August 1975, JPOC (NMI); **R. Flesk** (W0185), exiting L. Guitane, 2♂♂12♀♀ 10 October 1972, JPOC (NMI); **R. Gaddagh** (V8491), ♂ 24 August 1973, JPOC. **MAYO: Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT 3♂♂ 30 May-20 June 1997, MCDS, det. JPOC. **TIPPERARY: Kilmastulla R.** (R6867), adults 1976-1977, MAOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], 2♂♂ 18 August 1888, [JJFXK], det. MEM (HMAG). **WICKLOW: Calary Lower** (O2312), 18♂♂3♀♀ 22 August 1988, JPOC; **R. Brittas** (O0218), 2♂♂2♀♀ 18 August 1973, JPOC (NMI).

29. *Oxyethira sagittifera* Ris, 1897

FIGURES 77-78. Known Irish and European distributions of *Oxyethira sagittifera*.



Oxyethira sagittifera is a local species in Ireland. The larvae occur in lakes. Only the final larval instar has a case. Interestingly, an adult has been taken on Clare Island, County Mayo, off the Irish coast. The species has a discontinuous European distribution.

Flight period: April–May (3 April–29 May), July–September (5 July–7 September). No Irish adults collected in June. There are only a small number of Irish adult records. Barnard and Ross (2012) give the British flight period as June–August.
Counties and 10km squares: Galway, Kerry, Mayo (3/32). The species is known from four 10km squares (4/1019).

Published records

Mosely, 1927 as *Oxyethira saggitifera* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *O. saggitifera* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822)). *Mosely, 1939* (**IRELAND**). *Kimmins, 1958* (**GALWAY**). *Hickin, 1967* (**GALWAY**). *Marshall, 1978a* (**IRELAND**). *Marshall, 1978b* ((M0-2-) = [M0822], (V7-8-) = [V7489]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Wise, 1984* (**KERRY:** Muckross Lake; Upper Lake [Killarney]). *O'Connor, 1987* (**GALWAY**. **KERRY**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Bracken, 1998* (**KERRY:** Killarney). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**GALWAY**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Muckross Lake (V9685)).

Unpublished records and voucher specimens

GALWAY: Inverin (M0822), ♂ 17 July-2 August 1926, MEM, conf. JPOC (BMNH). **KERRY: L. Cummernamuck** (V7489), ♂♂♀♀ 5 July 1973, JPOC (NMI); **L. Looscaunagh** (V8879), ♂ 22 May 2001, JPOC; **L. Nakirka** (V7389), 6♂♂16♀♀ 27 August 1973, JPOC (NMI); **Muckross Lake** (V9685), boat house, LT 4♂♂ 4-5 July 1973, JPOC, (V9685), Dundag Bay, IET 2♂♂ 1 September & ♂ 7 September 1972, JPOC (NMI); **Upper Lake, Killarney** (V9383), Long Range, 2♂♂♀ 29 May 1974, (V9383), 2♂♂ 3 April 1973, JPOC. **MAYO: Clare Island** (L6985), MT, ♂, SF, conf. JPOC (NMI).

30. *Oxyethira simplex* Ris, 1897

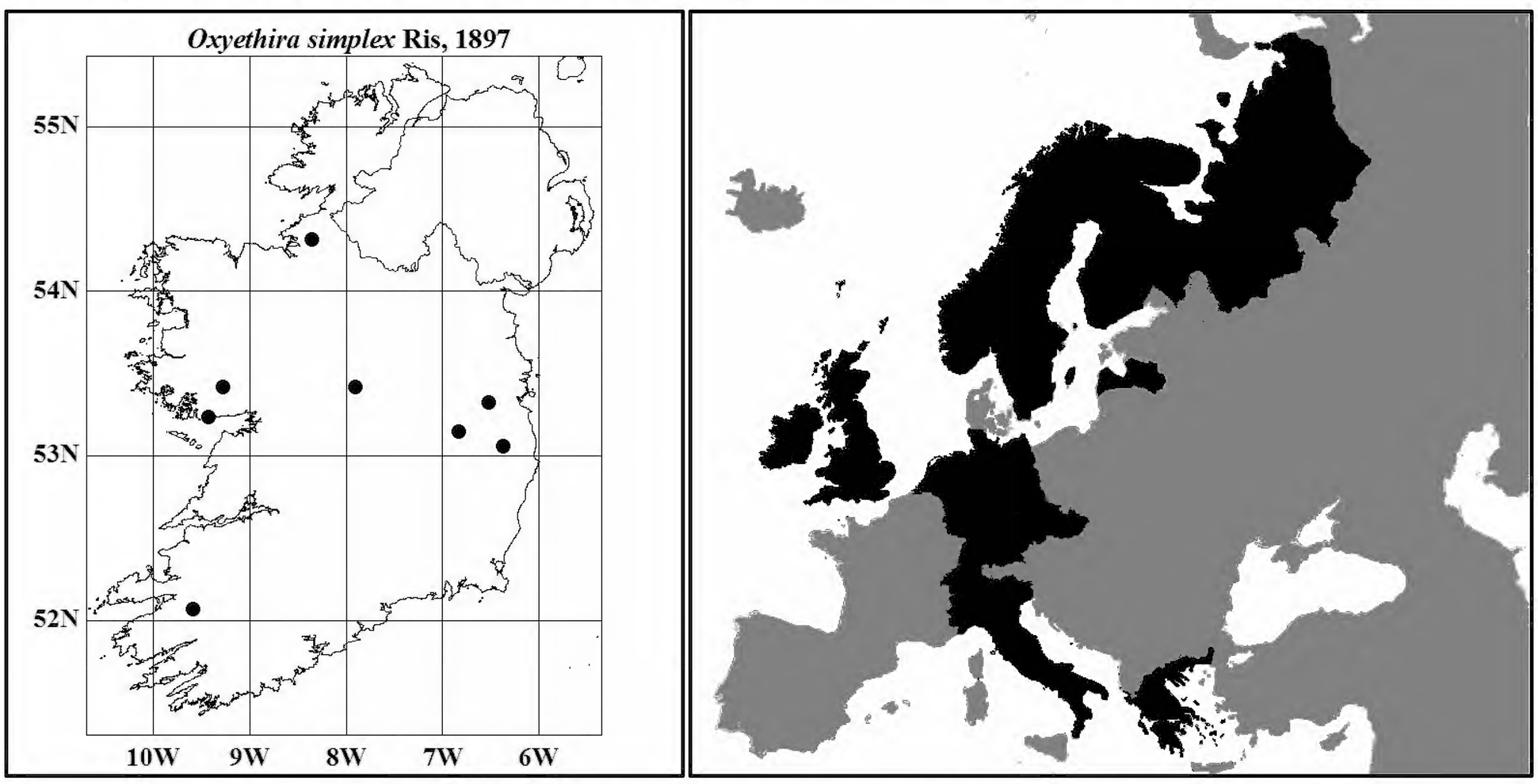
Oxyethira simplex is widely distributed but as yet unrecorded from large areas of Ireland. The larvae occur in rivers and streams including the latter in fens and marshes. Only the final larval instar has a case. The species has a discontinuous European distribution.
Flight period: June–September (6 June–11 September).
Counties and 10km squares: Galway, Kerry, Kildare, Leitrim, Westmeath, Wicklow (6/32). The species is known from eight 10km squares (8/1019).

Published records

Mosely, 1927 (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Kimmins, 1958* (**GALWAY**). *Hickin, 1967* (**GALWAY**). *Marshall, 1978a* (**BRITISH ISLES:** throughout). *Marshall, 1978b* ((M0-2-) = (M0822), (M1-4-) = [M1343]). *Botosaneanu and Malicky, 1978* (**IRELAND**).

Wallace et al., 1983 (**GALWAY:** Inverin (M0822); Oughterard (M1343). **KILDARE:** Louisa Bridge (N9936)). *O'Connor, 1987* (**GALWAY**. **KILDARE**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**GALWAY**). *Barnard and Ross, 2012* (**IRELAND**).

FIGURES 79-80. Known Irish and European distributions of *Oxyethira simplex*.



Unpublished records and voucher specimens

GALWAY: Inverin (M0822), ♂ 17 July-2 August 1926, MEM, conf. JPOC (BMNH); **Oughterard** (M1343), ♂ 3-9 August 1926, MEM, conf. JPOC (BMNH). **KERRY: R. Deenagh** (V9590), Kenmare Estate, ♀ 8 September 1981, JPOC. **KILDARE: Louisa Bridge** (N9936), marshy area, ♂♂♀♀ 22 August 1982, JPOC/MAOC, det. JPOC, conf. PCB (BMNH, NMI, NML, National Museums Northern Ireland), ♂ 6 June 1991, JPOC; **Newbridge (Pollardstown) Fen** (N7715), ♂ 11 September 1985, JPOC, ♂♂ 24 June 1989, JAG, det. JPOC (NMI). **LEITRIM: Glencar Waterfall** (G7543), ♀ 25 August 1992, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 10b August 1888, [JJFXK], det. JEM, conf. JPOC (BMNH), ♂ 10B August 1888, JJFXK, det. MEM, conf. JPOC (HMAG), ♂ 18 August 1888, [JJFXK], det. MEM (HMAG). **WICKLOW: Glendalough** (T1197), river, 2♂♂3♀♀ 11 September 1990, JPOC.

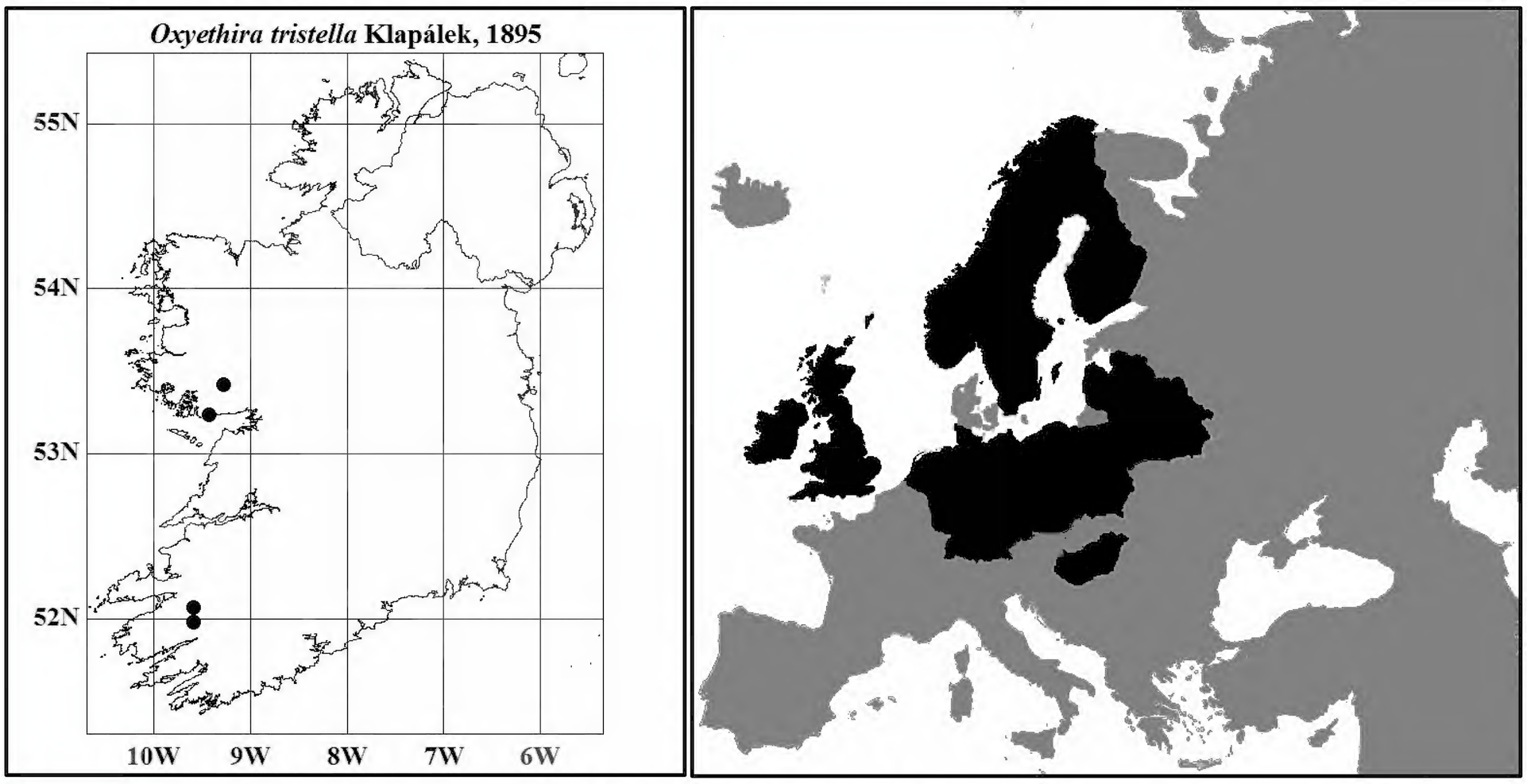
31. *Oxyethira tristella* Klapálek, 1895

Oxyethira tristella is a local species in Ireland, known to occur in lakes. Only the final larval instar has a case. Outside the British Isles, the species has been recorded from central and northern Europe.

Flight period: (May) July–August (10 July–9 August). An adult was taken on 6 May. There are only a small number of Irish adult records. Barnard and Ross (2012) give the British flight period as May–September.

Counties and 10km squares: Galway, Kerry (2/32). The species is known from four 10km squares (4/1019).

FIGURES 81-82. Known Irish and European distributions of *Oxyethira tristella*.



Published records

Mosely, 1927 (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822)). *Kimmins, 1958* (**GALWAY**). *Hickin, 1967* (**GALWAY**). *Marshall, 1978a* (**BRITISH ISLES:** throughout). *Marshall, 1978b* ((M0-2-) = [M0822], (M1-4-) = [M1343]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**GALWAY. KERRY**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**GALWAY**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

GALWAY: Inverin (M0822), adult 17 July-2 August 1926, MEM (BMNH); **Oughterard** (M1343), ♂ 3-9 August 1926, MEM, slide conf. JPOC (BMNH). **KERRY: Gap of Dunloe** (V8787), lakes, ♂♂♀♀ 10 July 1986, JPOC (NMI); **Muckross Lake** (V9385), Dinish, ♂ 6 May 1987, KGMB, det. JPOC (NMI).

32. *Tricholeiochiton fagesii* (Guinard, 1879)

Only known in Ireland from its distinctive cased larvae, *Tricholeiochiton fagesii* is a rare species which occurs in lakes and bog pools. Only the final larval instar has the case which is sac shaped. The larva has very long legs (Fig. 85). One of the two specimens from Finlough, County Offaly, was examined by Ian Wallace who confirmed that it agreed with definite British material (O'Connor and O'Hanrahan, 1988). The species has a discontinuous distribution and is not known from large areas including the Iberian Peninsula, Norway and most of eastern and southern Europe.

Flight period: no Irish adults. Barnard and Ross (2012) give the British flight period

as July.

Counties and 10km squares: Galway, Kerry, Offaly, Westmeath (4/32). The species is known from five 10km squares (5/1019).

FIGURES 83-84. Known Irish and European distributions of *Tricholeiochiton fagesii*.

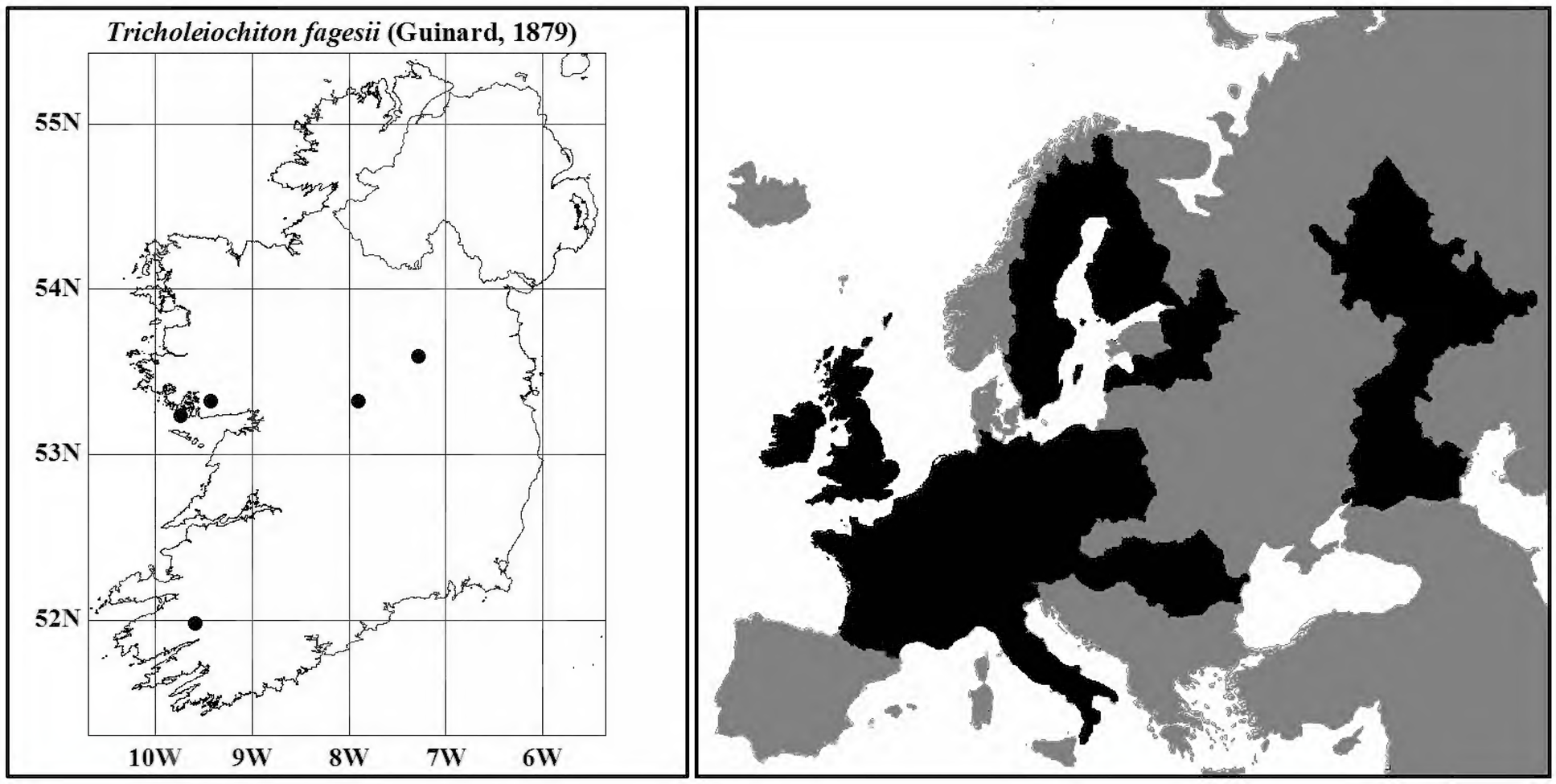
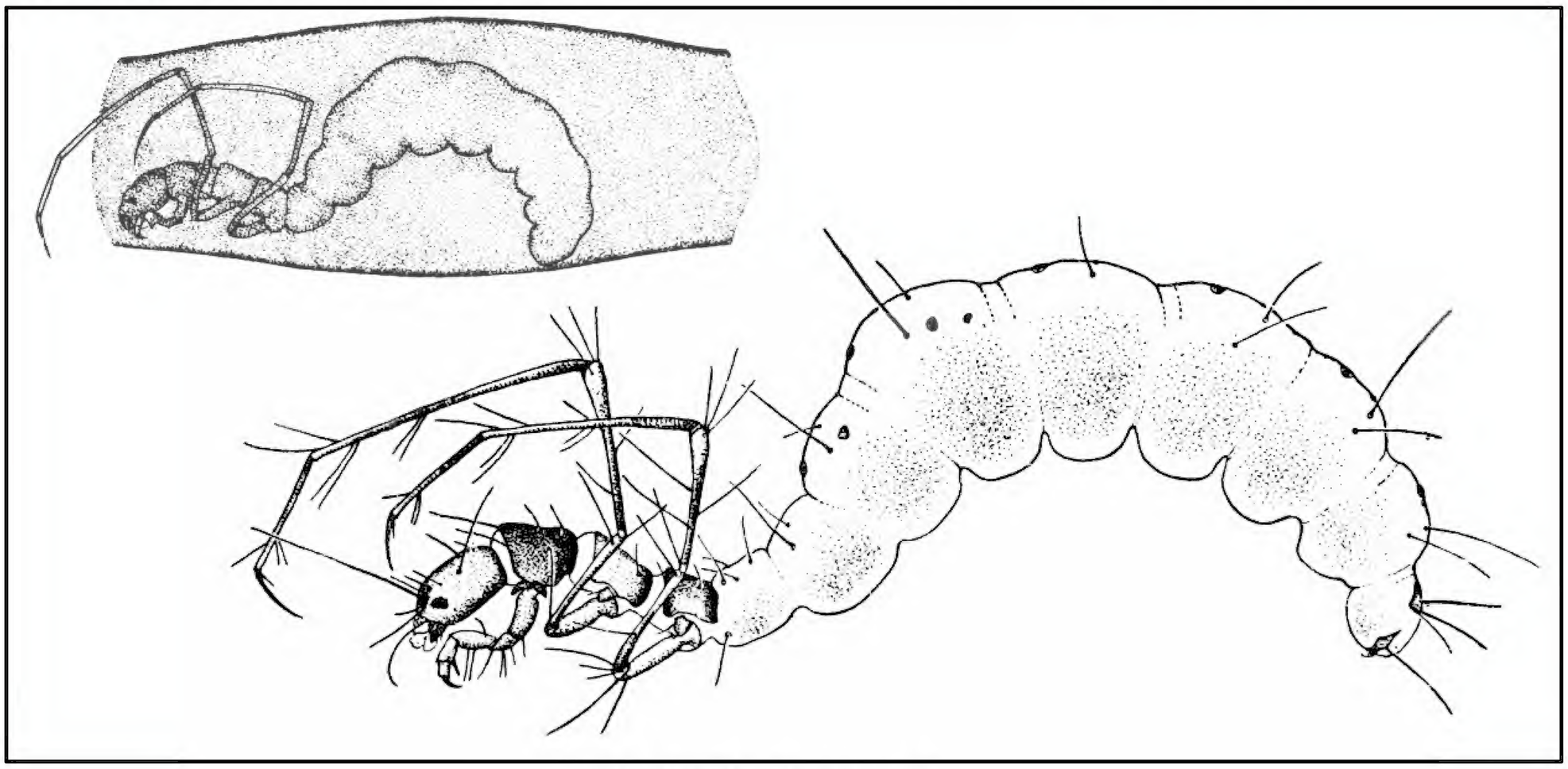


FIGURE 85. The larva of *Tricholeiochiton fagesii* (after Lepneva, 1964).



Published records

Barker, 1867, 1873 (WICKLOW: Carrick Mountain [misidentification: see Tomes, (1866); O'Connor and O'Hanrahan (1988)]). *McLachlan, 1874-1884* (Dublin Microscopical Society). *Mosely, 1939* (Dublin Microscopical Society). *Marshall, 1978a* (possibly IRELAND). *O'Connor and O'Hanrahan, 1988* (**OFFALY:** Finlough (N0329), first authentic record). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Sweeney, 2006* (**KERRY:** Upper Lake (V9181) [Killarney]).

Donohue et al., 2009 (**IRELAND**). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), pool). *O'Connor and Nelson, 2012* (**OFFALY**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**GALWAY:** Genicmurren [Glenicmurrin] L. (M0031); L. Hibbert (L8822)).

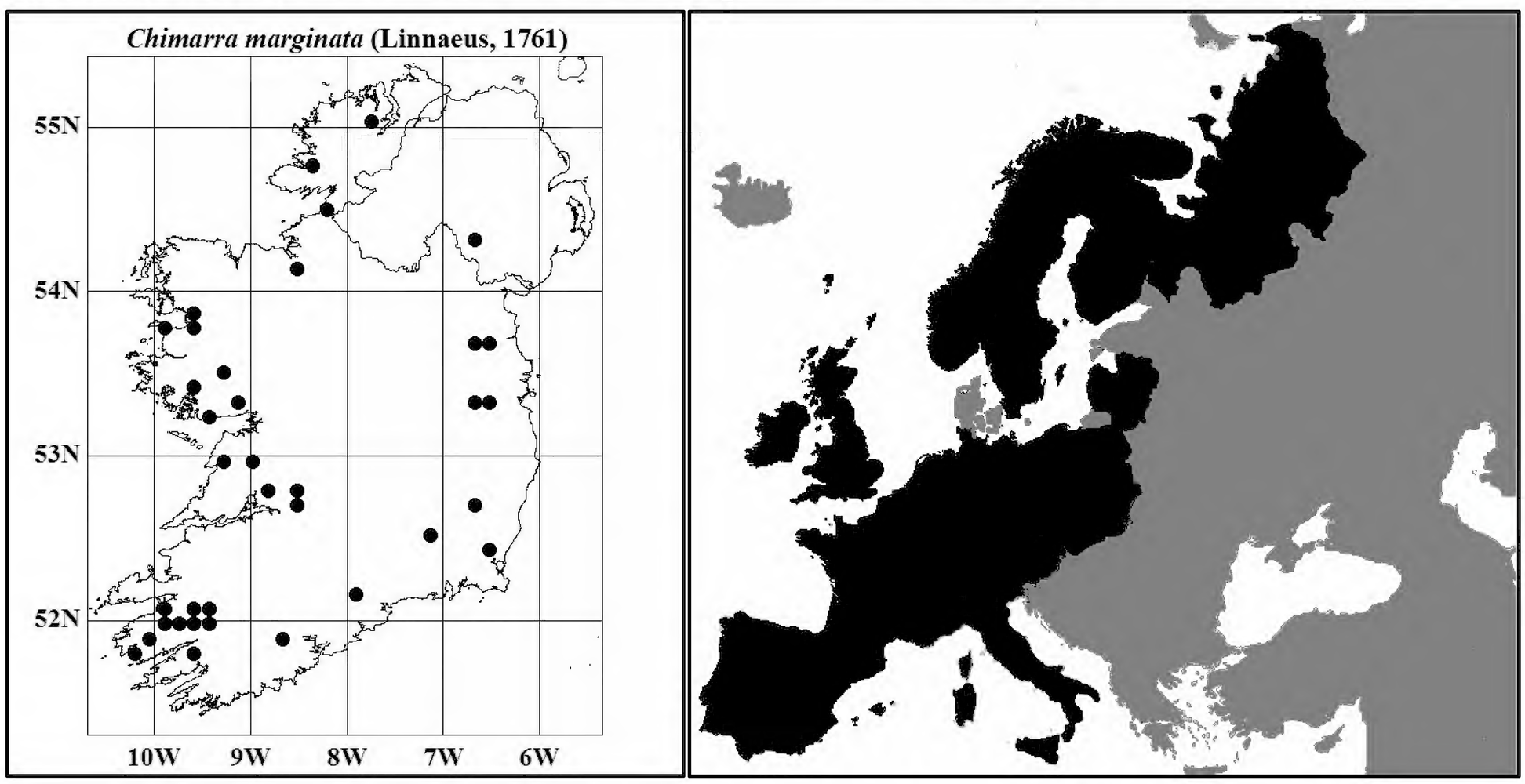
Unpublished records and voucher specimens

KERRY: Upper Lake, Killarney (V9181), Stag Island Bay, larva September 1996, PS, conf. JPOC (NMI). **OFFALY: Finlough** (N0329), Horsefly Leap, Clonmacnoise, larva 6 July and larva 7 July 1987, BMOH, conf. JPOC (NMI, NML).

PHILOPOTAMIDAE

33. *Chimarra marginata* (Linnaeus, 1761)

FIGURES 86-87. Known Irish and European distributions of *Chimarra marginata*.



Chimarra marginata is widely distributed in Ireland. The larvae occur in fast flowing rivers and streams where they spin nets to filter out small-sized food particles including diatoms. Adults can be observed flying in large numbers especially in the west and south-west of Ireland and are very attractive looking insects with their yellow wing markings particularly when seen in the sunshine. The species is widespread but not known from much of eastern and southern Europe.

Flight period: June–October (1 June–10 October).

Counties and 10km squares: Armagh, Carlow, Clare, Cork, Donegal, Dublin, Galway, Kerry, Kildare, Kilkenny, Limerick, Mayo, Meath, Sligo, Waterford, Wexford (16/32). The species is known from thirty-six 10km squares (36/1019).

Published records

Stephens, 1836 (**KERRY:** Dunlough Gap [Gap of Dungloe (V8786)], near Killarney). *Curtis, 1838* (**IRELAND**). *Hagen, 1860-1861* (**IRELAND:** amongst waterfalls). *King, 1888a* as *Chimarrha* (**DUBLIN:** Lucan Demesne (O0235) [R. Liffey]. **GALWAY:** L. Corrib (Galway) (M2829). **KERRY:** Dinish (V9385); Flesk R.

(V9689); Gap of Dunloe (V8787); Ross Castle (V9488). **MAYO:** Carrowbeg (M0084) and Newport Rivers (L9994)). *King, 1891* as *Chimarrha* (**ARMAGH:** Armagh neighbourhood (H8745)). *Turner, 1903* as *Chimacha* (**KILKENNY:** Woodstock, Inistioge (S6437)). *King and Halbert, 1910* as *Chimarrha* (**DONEGAL:** Ardara (G7390) [Owntocker R.]; Bundoran (G8259); Cottian (C1318) [Leannan R.]; R. Lennan [Leannan] (C1521). **DUBLIN:** Lucan demesne (O0235) [R. Liffey]. **GALWAY:** L. Corrib near Galway (M2829). **KERRY:** Dinish (V9385); Flesk R. (V9689); Gap of Dunloe (V8787); Ross Castle (V9488). **MAYO:** Carrowbeg (M0084) and Newport (L9994) Rivers. **WATERFORD:** R. Blackwater near Lismore (X0498). **WEXFORD:** Edenvale (T0427) [R. Sow]). *Halbert, 1912* as *Chimarrha* (**MAYO:** Louisburgh (L8080); Newport (L9893); Westport (L9984)). *Mosely, 1927* as *Chimarrha* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Chimarrha* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Chimarrha* (**GALWAY:** Inverin (M0822)). *Frost, 1942* as *Chimarrha* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7281), (V7192)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune, the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 6 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** L. Derriana stream (V6274); R. Flesk (V9789)). *Anon., 2015a* (**CORK:** Glengarriff Nature Reserve (V9157)).

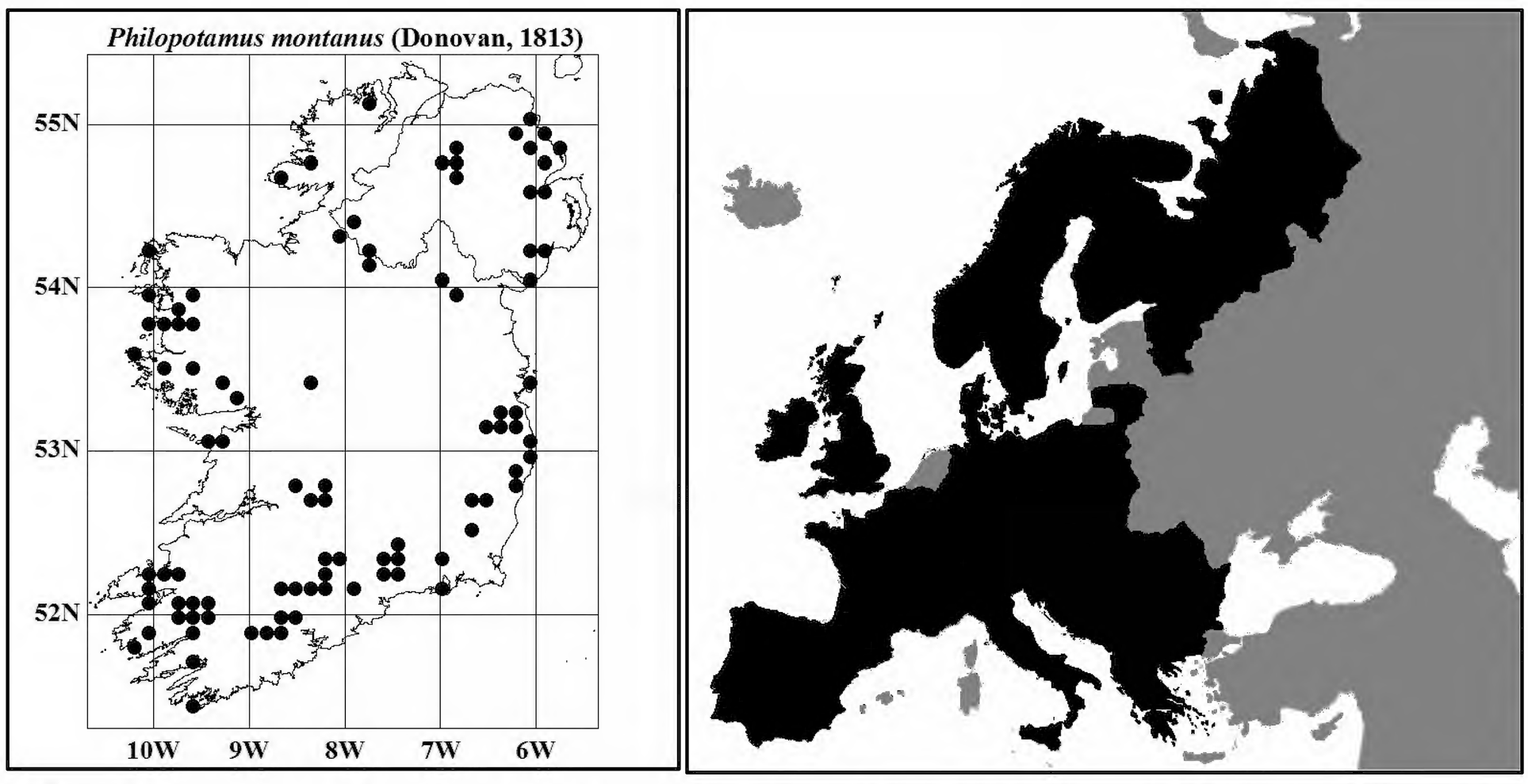
Unpublished records and voucher specimens

CARLOW: R. Slaney, Clonegal (S9161), adult 31 August 1946, JRH. **CLARE: Moyree R.** (R3689), ♂♀ 11 July 1973, JPOC (NMI); **R. Cullenagh** (R1388), LT ♀ 9-10 July 1973, JPOC; **R. Inagh** (R1188), adults June-September, MK; **R. Owengarney** (R4767), 6 larvae 20♂♂18♀♀ 2 September 1973, JPOC; **R. Shannon** (R6767), O'Brien's Bridge, ♂ 3 September 1973, JPOC; **Sixmilebridge** (R4767) [Rally R.], north of, 3♂♂3♀♀ 6 August 1986, CM/OSF (SINMNH). **CORK: R. Lee** (W5671), adults June-September, MK. **DONEGAL: Bundoran** (G8259), ♂5♀♀ July 1890, [WFJ], conf. JPOC (NMI); **Kilmacrenan** (C1420), adults June & July 1891, JJFXK (TMM) (per IDW). **DUBLIN: Lucan** (O0235) [R. Liffey], adults 25 August & (conf. JPOC) 29 August 1888, [JJFXK], Harwood Coll. (BMNH); **R. Liffey** (O0235), Lucan Demesne, adult 25 July 1947, JRH. **GALWAY: Cong** (M1455), path to disused corn mill, ♂ 8 July 2012, MG; **Inver** (L9139), adult 5 July 1945, JRH; **Inverin** (M0822), adult 26 August-6 September 1929, MEM (BMNH). **KERRY: Galway's Bridge** (V9180), ♂ 4 July 1973, JPOC; **Killarney**, [JJFXK] (NMS), adults 27 June & 29 June 1887 (conf. JPOC), [JJFXK], Harwood Coll. (BMNH), ♂♀ 27 June, ♂ 28 June & ♂ 29 June, adult 5 August 1887, JJFXK, conf. JPOC (NMI); **L.**

Currane (V5265), ♂ 6 July 1973, JPOC; **L. Guitane** (W0285), ♂2♀♀ 3 July 1973, JPOC (NMI); **L. Looscaunagh** (V8879), ♀ 4 August 1986, CM/OSF (SINMNH); **R. Cummeragh** (V5872), 5♂♂3♀♀ 6 July & 2♀♀ 26 August 1973, JPOC; **R. Flesk** (V9689), 5♂♂3♀♀ 25 June 1973, (W0185), ♂ 10 October 1972 (NMI), JPOC; **R. Laune** (V8892), 3 larvae 16 November 1971, EJW (NMI); **R. Owgarriff** [R. Owengarriff] (V5871), Waterville, adult 5 August 1968, JRH; **stream** (V6274), near Derriana L., LT ♂3♀♀ 1-13 July 1979, JPOC (NMI); **Waterville** (V5065), [near L. Currane], adult 14 June 1968, JRH. **KILDARE: R. Liffey** (O0035), Leixlip, adult 28 June 1947, JRH. **LIMERICK: R. Shannon** (R6663), near Castleconnell, 8♂♂15♀♀ 3 August 1988, JPOC (NMI). **MAYO: Louisburgh** (L8080), adult 19 July 1910, CJM, det. JRAG (IM) (per IDW); **Westport** (L9984), ♂♂♀, JJFXK, conf. JPOC (NMI). **MEATH: R. Blackwater** (N8568), larva 16 December 1971, JPOC (NMI); **R. Boyne** (O0373), Donore, adults 1 June & 22 June 1946, JRH, (N8768), Navan, adult 25 August 1927, (N9271), Stackallen, adult 5 August 1945, adult 6 September 1946, JRH, (N8768), larva 16 December 1971, AFF, det. JPOC. **SLIGO: tributary of the R. Unshin** (G7025), adult 8 September 1946, JRH. **WATERFORD: Lismore** (X0498), ♂♀, conf. JPOC (NMI), ♀ July 1894, GHC, conf. JPOC (NMI). **WEXFORD: Wexford** [Edenvale (T0427) [R. Sow]], ♂3♀♀ 11 July & 5♂♂ 16 July 1902, JJFXK, conf. JPOC (NMI).

34. *Philopotamus montanus* (Donovan, 1813)

FIGURES 88-89. Known Irish and European distributions of *Philopotamus montanus*.



Philopotamus montanus is widely distributed in Ireland. Adults have often been observed flying in the evenings and mornings beside light-traps but have not been captured by them. The larvae occur in fast-flowing streams and waterfalls where they spin nets to filter out small-sized food particles including diatoms. In the Glenfinnish River, County Cork, five larval instars were identified. Overwintering occurred in

instars III, IV and V. The species appears to have a one year-cycle (Sangpradub, Giller and O'Connor, 1999). The larvae are among the prey of the stoneflies *Dinocras cephalotes* and *Perla bipunctata* (Lucy, Costello and Giller, 1990). Malicky (2005) states that *P. montanus* (including *P. achemenus* Schmid, 1959) and *P. variegatus* Scopoli, 1763 need to be urgently revised over a wide area. Since subspecies can be connected by transitions, their distinction is not easy. For this reason, they were not included in Malicky (2004). *P. montanus* is widespread in Europe.

In Dún an Rí Forest Park, County Cavan, the author found large numbers of adults dead beside a stream after being attacked by the fungus *Erynia rhizospora* (Thaxt.) Remaud. & Hennebert. The bodies were held firmly beneath logs and stones by the rhizoids. The fungus resembles cotton wool. Other species of Irish Trichoptera including *Limnephilus lunatus* have been observed to be attacked by the same fungus and sometimes infected adults have been attracted to light-traps.

Flight period: February–October (17 February–13 October).

Counties and 10km squares: Antrim, Carlow, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kilkenny, Mayo, Monaghan, Tipperary, Tyrone, Waterford, Wexford, Wicklow (20/32). The species is known from ninety-three 10km squares (93/1019).

Published records

Stephens, 1836 (**IRELAND**). *Stephens, 1836* as *Philopotamus scopulorum* (**IRELAND**). *Hagen, 1860-1861* (**IRELAND**). *Hagen, 1860-1861* as *Philopotamus scopulorum* (**IRELAND**). *McLachlan, 1885* (**ANTRIM:** Colin Glen (J2771)). *King, 1888a* (**ANTRIM:** Colin Glen (J2771). **DUBLIN:** Howth (O2838). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Ma'am Burn (L9653). **KERRY:** Devil's Punch Bowl (V9781); Gap of Dunloe (V8787); Horses' Glen (V9981); The Glen in Deer Park (V9792); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084); Croagh Patrick (L9080) (streams on). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *King and Halbert, 1910* (**ANTRIM:** Colin Glen (J2771). **DONEGAL:** Ardara (G7390) [Owntocker R.]; Loughs Reelan (C1327) and Salt (C1226). **DUBLIN:** Howth (O2838); Tibradden (O1422). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Clonbrock (M7439) [Bunowen R.]; Maam R. (L9653). **KERRY:** Devil's Punch-bowl (V9781); Gap of Dunloe (V8787); Horse's Glen (V9981); Kenmare (V9070); the Glen in Deer Park (V9792); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084); Clare Island (L6985); Croagh Patrick (L9080) (streams on); Inishbofin (L5365). **WATERFORD:** Glenshelane (S1203); Salterbridge (S0800) near Cappoquin. **WEXFORD**. **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Halbert, 1912* (**MAYO:** Achill Island (F6405); Belmullet (F6634); Clare Island (L6985); Mulranny (L8296), P [P not given in list, may be misprint]; Westport (L9984)). *Kimmins, 1934* (**WICKLOW:** Athdown (O0714)). *Carter, 1967* (**CORK:** Cape Clear Island (V9421)). *Kennedy and Fitzmaurice, 1968a* (**CORK:** Connolly's Stream (Glashagarriff R.) (W4175)). *Toner and O'Connell, 1971* (**CORK:** Blarney

(R. Martin) (W6176); Fermoy (R. Blackwater) (W8098); Mallow (R. Blackwater) (W5598); Rathduff (R. Martin) (W5984)). *Fahy, 1972a* (**MAYO:** (F9505)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Fahy, 1972c* (**MAYO:** Altahoney R. (F9605)). *Hazelton, 1974a, b* (**CLARE:** St Catherine's 1 (R0898) (Doolin Cave System), on wall of first passage; Doolin Cave System (R0898), Fisher Street Pot, in fast flowing shallow part of Main Stream; Poulnagollum (Lower) (M1604), larva in chamber containing large waterfall. **FERMANAGH:** Arch Cave (H1047), from pool in ascending boulder passage; Pollnagollum [Cave] (H1233), 350ft [107m] above stream, mud-lined pools; Marble Arch Cave (H1233), Skreen Hill Passage, on boulder in middle of stream). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1819)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881)). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor, 1987* (**IRELAND:** widespread). *Lucy, Costello and Giller, 1990* (**KERRY:** Cottoners R. (V8379)). *Twomey and Giller, 1991* (**CORK:** tributary of R. Araglin (R8702)). *Giller, Sangpradub and Twomey, 1991* (**CORK:** R. Araglin, Glenfinish Bridge (R8702)); *Giller and Twomey, 1993* (**CORK:** Glenfinnish R. (R8702); R. Awbeg (R6804)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Wright et al., 2000* (**NORTHERN IRELAND:** 6 out of 70 sampled sites). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706)). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 50 out of 207 river sites). *Kelly-Quinn et al., 2005* as *Philopotamus monatus* (**IRELAND:** rivers). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Driscoll et al., 2013* (**MAYO:** Glennamong (F9303), (F9403)). *O'Driscoll et al.*, *2014* as *Philopotamus montana* (**MAYO:** Srahrevagh R. (G0004)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Douglas Burn (J2299); Glenariff R. (D2221); Glynn R. (J4099); Legnagooly Burn (D1312); R. Glenarm (D3114); Six Mile Water (J3195). **DERRY (LONDONDERRY):** R. Douglas (H7796); R. Owenalena (C7406). **DOWN:** Cassy Water (J2314); R. Kinnahalla (J2328); R. Shimna (J3532). **FERMANAGH:** R. Black (H0143). **TYRONE:** Oughtmame Burn (H6293)). *Callanan, Baars and Kelly-Quinn, 2014* as *Pilopotamus* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758); R. Mulkear (R8668), (R8165), (R8467), (R8667); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Feeley and Kelly-Quinn, 2014* (**IRELAND:** streams). *Anon., 2015a* (**KERRY:** Killarney National Park (V9684)).

Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), 3 adults 1885, CGB, RMCL Coll. (BMNH). **CARLOW: R. Slaney** (S9161), adult Clonegal, 31 August 1946, JRH. **CAVAN: Dún an Rí** (N7997), stream, ♂♂♀♀ 6 June 1994 & 1996, 14 April 2004, HOC/JPOC, det. JPOC

(NMI); **stream/waterfall** (H1224), 2 larvae & 2♂♂ 3 August 1973, JPOC. **CORK: Clear Island** (V9521), stream by south harbour, ♂ 2 June 1985, KGMB, det. JPOC; **Glengarriff** (V9256), adult July 1947, BPB, det. JRH; **R. Araglin Catchment** (R8702), larvae, NS & PSG; **R. Laney** (W3674), adults April, MK; **R. Lee** (W5671), adults April, MK; **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI). **DONEGAL: Ardara** (G7390) [Owntocker R.], ♂ 13 September 1892, WFJ, conf. JPOC (NMI); **Slieve League** (G5676), bottom of, ♀ 13 July 1980, JS, det. JPOC (NMI). **DOWN: Tollymore National Park** (J3532), stream, ♂ 22 June 2014, JPOC (NMI), (J3432), stream, ♂♀ 22 June 2014, JPOC. **DUBLIN: Ballinascorney** (O1120), near Bohernabreena, adult 20 August 1945, JRH; **Glencullen R.** (O1919), ♂♀ pupae 27 September 1977, JPOC; **Howth** (O2838), ♂ 31 August 1888, JJFXK, conf. JPOC (NMI), ♀ 17 May 1894, G. V. Hart, conf. JPOC (NMI); **Piperstown** [Hill] (O1022), 800ft [244m] altitude, ♂ 17 February 1923, AWS, conf. JPOC (NMI); **Tallaght Stream** (O0726), Jobstown, adult 18 August 1947, JRH; **Tibradden** (O1422), ♂, JNH, conf. JPOC (NMI). **GALWAY: Clonbrock** (M7439) [Bunowen R.], ♂, conf. JPOC (NMI); **Connemara National Park** (L7455), Polladirk R., larvae 1991, SV, conf. JPOC; **L. Corrib** (M2836), adults September, MK. **KERRY: Blue Pool** (V9786), ♂ 30 May 1973, JPOC; **Clohereen** (V9886), ♂ 21 March 1993, Catherine Kearns, det. JPOC (NMI); **Devil's Punch Bowl** (V9781), exit stream, larvae and pupae, June 1974, IDW; **Finglass R.** [Finglas] (V5163), Waterville, adult 21 September 1966, adult 14 June 1968, JRH; **Galway's Bridge** (V9180), 3♂♂♀ 31 May 1995, JPOC; **Gap of Dunloe** (V8786), streams, 3♂♂♀ 10 July 1986, JPOC; **Kenmare** (V9070), ♀, conf. JPOC (NMI); **Killarney**, adult 1940, BPB, det. JRH, adult August, RMCL Coll. (BMNH), 2♂♂ 16 July & 2♂♂ 20 July 1887, JJFXK, conf. JPOC (NMI); **L. Anscaul** (Q5805), ♀ 20 July 1978, JMCH, det. JPOC (NMI); **L. Leane** (V9488), Inisfallen/Ross Bay, ♂ 27 March 1974, (V9188), near O'Sullivan's Cascade, 2♂♂2♀♀ 27 August 1987, JPOC; **Mangerton** (V9780), adult 17 August 1877, AEE, RMCL Coll (BMNH); **O'Sullivan's Cascade** (V9188), 23♂♂4♀♀ 13 April & ♂ 13 October 1973, JPOC; **Pass** (Q6909), south of Camp, ♀ 10 June 1982, HM, det. H. Malicky; **R. Behy** (V6589), ♂ 6-7 July & 3♂♂♀ 26 August 1973, JPOC; **R. Cummeragh** (V5872), ♂ 6 July 1973, JPOC; **R. Flesk** (W0387), larva February 1972, EJW (NMI); **R. Gaddagh** (V8391), 4♂♂♀ 24 August 1973, JPOC (NMI); **stream** (V6274), near Derriana L., Waterville, 4♀♀ LT 1-13 July 1979, JPOC (NMI); **stream** (V9385), at Dinish, ♂2♀♀ 31 May 1995, JPOC; **stream** (Q6208), entering Owencashla R., ♂♂♀♀ 28 August 1973, JPOC; **Torc Cascade/Stream** (V9684), 10♂♂♀ 28 May 1974 (NMI), 3♂♂♀ 30 May 1995, JPOC. **KILKENNY: R. Lingaun** (S4230), 3 June 1973, MCDS, det. JPOC (NMI). **MAYO: Achill Island** (F6405), ♂ 11 June 1909, conf. JPOC (NMI); **Clare Island** (L6985), adult July 1910, CJM, det. JRAG (IM) (per IDW), ♂ September 1910, WFJ, conf. JPOC (NMI), ♂♀ 1909, conf. and det. JPOC (NMI); **Croagh Patrick** (L9080), ♂ 10 June 1909, conf. JPOC (NMI), 1500ft [457m], ♂ 16 June 1909, JNH, det. JPOC

(NMI); **Louisburgh** (L8080), adult 19 July 1910, CJM, det. JRAG (per IDW); **Westport** (L9984), ♂, JJFXK, conf. JPOC (NMI). **MONAGHAN: Knappagh Water** (H6910), Billy Fox Memorial Park, ♂♂♀♀ 30 May 2013, JPOC. **TIPPERARY: Ahenny** (S4129), stream near, ♂ 14 August 2000, JPOC; **Kilmastulla R.** (R6867), larvae/adults 1976-1977, MAOC; **R. Lingaun** (S4031), Slate Quarries, 9♂♂ 21 August 2000, JPOC. **TYRONE: Ballinderry R.** (H7579), Wellbrook Beeting Mill, ♂ 20 September 2014, JPOC/MAOC, det. JPOC (NMI). **WATERFORD: Carrick on Suir** (S3621), streams near, ♀ 12 July 1989, JPOC; **Glasha R.** (S3022), ♂ 8 July 1989, u/s Glenpatrick Bridge, ♀ 27 May 1997, JPOC/MAOC, det. JPOC; **Mahon Falls** (S3108), stream near, 2 larvae & 2♂♂♀ 25 July 2015, JPOC/MAOC, det. JPOC; **Portally Cove** (X6799), stream, 3♂♂♀ 24 May 1997, JPOC; **stream** (S3411), the Comeraghs, ♂♂♀ 13 July 1987, JPOC (NMI). **WEXFORD: Killoughrim Forest** (S9041), stream, 2♂♂♀ 27 May & ♂ 4 June 1987, ♀ 3 July 2014, JPOC; **Oaklands Wood** (S7125), stream, ♀ 31 March 1989, JPOC. **WICKLOW: Athdown** (O0714), adult 10 June 1933, J. F. Perkins (BMNH); **Avondale** (T1986) [R. Avoca], ♂ 27 May 1989, JPOC; **Ballyhenry** (O2800), ♀ 18 February 1934, AWS, conf. JPOC (NMI); **Bray R.** (O2417), ♂ 13 June 1973, JPOC; **Goldmines Valley** (T1675), ♀ 14 March 1926, AWS, conf. JPOC (NMI); **Powerscourt** (O1912), adult August 1928, EFB, det. JRH; **R. Dargle** (O1418), Glencree, adult 5 August 1946, JRH; **R. Derry** (S9764), 2♂♂2♀♀ 20 September 1973, JPOC; **stream** (O0107), near Ballyknockan, ♂ 22 April 1974, JPOC; **stream** (N9911), near Lacken, 3♂♂♀ & larvae 10 March 1978 (NMI), ♂ 31 August 1986, JPOC; **stream** (O0208), near Ballyknockan, ♀ 24 August 1973, JPOC; **streams** (O0110), near Lackan, 3♂♂♀ 31 July 1986, CM/OSF (SINMNH); **stream/waterfall** (N9911), Sroughan, larva & 5♂♂♀ 22 July 1973, larva & 5♂♂ 22 April 1974, JPOC; **stream/waterfall** (O0114), 3♂♂2♀♀ 6 June 1973, JPOC; **Vartry R.** (T2797), ♂♀ 22 May 1973 (NMI), (T2796), ♂♀ 20 July 1973 (NMI), 2♂♂ 22 April 1974, JPOC.

34a. *Philopotamus montanus* form *scoticus* McLachlan, 1862

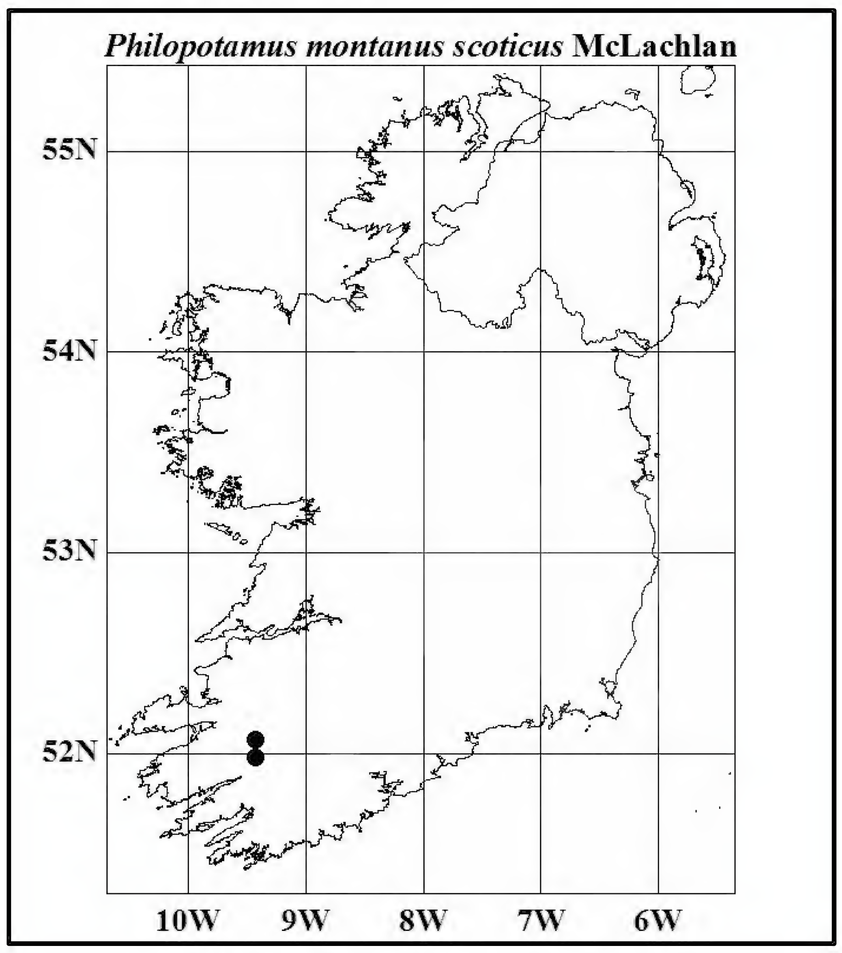
The status of *scoticus* is uncertain as various authorities have considered the taxon to be a variety, a form or a subspecies. The genitalia do not differ from those of *Philopotamus montanus montanus*. The Killarney population was first discovered in the eighteen hundreds and is still extant. The adults have the wings with golden streaks rather than the usual variegation. King (1888b) gave an excellent account of the habitat *et cetera* and it is repeated here "At Cloghereen, near Killarney, there is a swiftly flowing stream which is fed by a small lake, which, in its turn, is supplied by land springs, the water in both lake and stream even during August being icy cold; along the banks of the stream I captured large numbers of *Philopotamus montanus*, var. *scoticus*, but, although diligent search was made at intervals during five and six weeks, no example of the type of *montanus* could be obtained, whilst, at almost every other stream in the district, it occurred very commonly, although the variety was not

obtained". He added that the variety seem to be, upon the whole, a larger insect, the wings being more ample but he could not detect any differences in the anal parts from those of the type [meaning the typical form]. He also mentioned that the female appeared to be scarcer than the female of the typical form. The proportion of ♀ to the ♂ of *scoticus*, being about 7% and of the type 27%.

Flight period: May, July–August, October (28 May, 22 July–30 August, 20–21 October). The flight period is probably the same as that of the typical form (February–October).

County and 10km squares: Kerry (1/32). The form is known from two 10km squares (2/1019).

FIGURE 90. Known Irish distribution of *Philopotamus montanus* form *scoticus*.



Published records

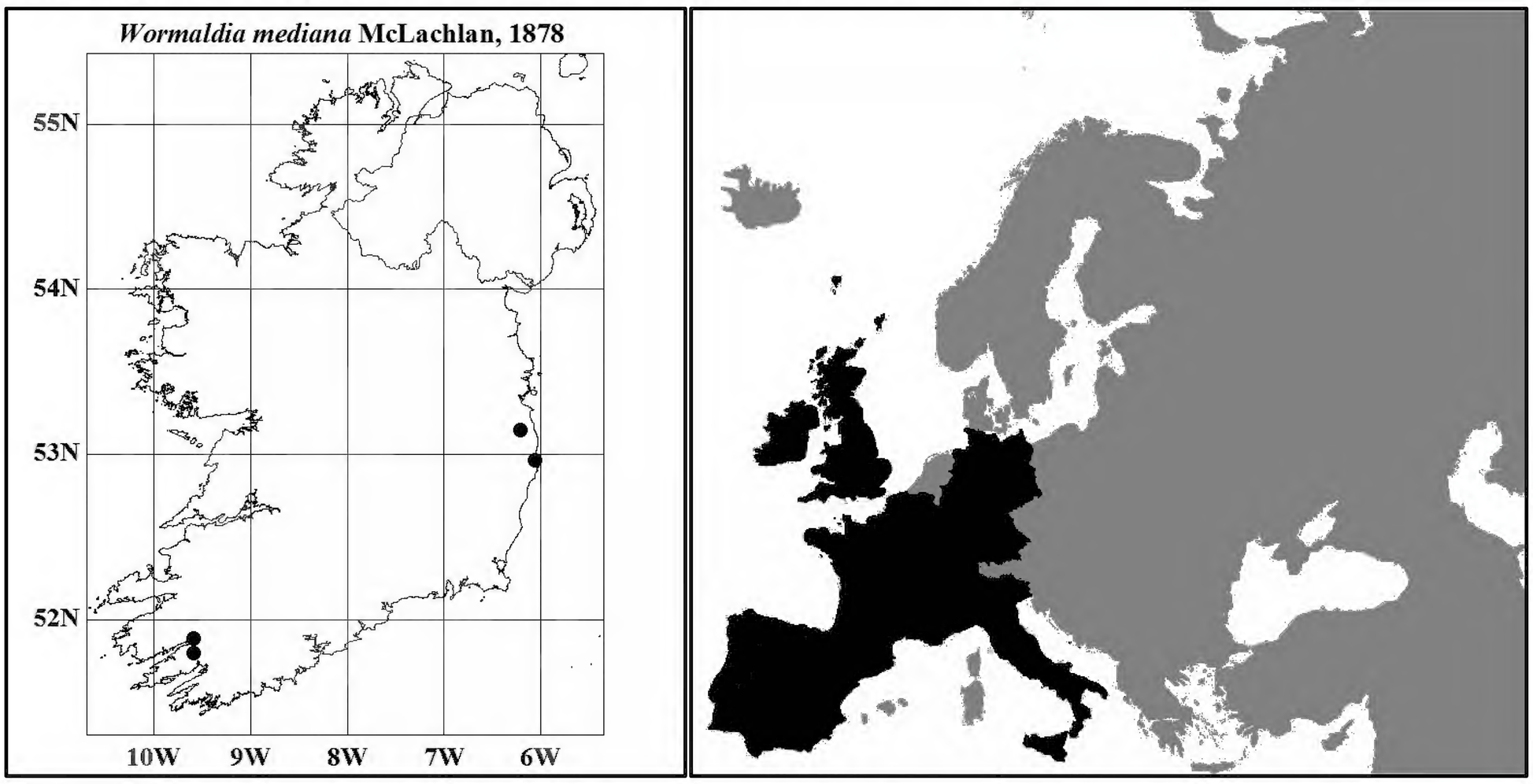
McLachlan, 1874-1884 as *Philopotamus montanus* Var. *scoticus* (**[KERRY]:** Killarney). *King, 1888a* as *Philopotamus montanus* var. *scoticus* (**KERRY:** Cloghereen (stream at) (V9787)). *King, 1888b* (**KERRY:** Cloghereen [account of site and the variety] (V9786)). *King and Halbert, 1910* as *Philopotamus montanus* Var. *scoticus* (**KERRY:** Killarney; stream at Cloghereen (V9787)). *Praeger, 1950* as *Philopotamus montanus* var. *scoticus* (**KERRY:** Killarney and Cloghereen (V9787)). *O'Connor and Nelson, 2012* (**IRELAND:** listed as a subspecies). *O'Connor and O'Connor, 2013* (**KERRY:** Killarney, Cloghereen (V9787))

Unpublished records and voucher specimens

KERRY: Killarney, eight adults August 1902, JJFXK, adult 1867, J. Hardy, 12 adults *viz.* 24 July 1887 (5), 28 July (5), 7 August & 8 August 1887 (one each), all RMCL Coll. (BMNH); type in cabinet T3 drawer 19 (BMNH), 2♂♂ 22 July, ♂ 24 July & ♂ 28 July, ♂ 1 August, 3♂♂ 7 August 1887, JJFXK, conf. JPOC (NMI); **R. Cloghereen** (V9787), adult 21 October 1946, JRH, ♂ 20 October 1946, [EFB Coll.], conf. JPOC (NMI), (V9786), near Blue Pool, 5♂♂♀ 30 August 1987, JPOC (NMI), (V9787), near hotel, ♂ 28 May 1995, JPOC.

35. *Wormaldia mediana* McLachlan, 1878

FIGURES 91-92. Known Irish and European distributions of *Wormaldia mediana*.



Wormaldia mediana is a local Irish species and is only known from three counties. The larvae occur in small fast-flowing rivers and spin nets which are used to filter out small-sized food particles including diatoms. Malicky (2005) lists two subspecies but only ssp. *mediana* is found in Ireland. The species is widespread in western and southern Europe.

Flight period: July–August (4 July–16 August).

Counties and 10km squares: Cork, Kerry, Wicklow (3/32). The species is known from four 10km squares (4/1019).

Published records

King, 1888a (**WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *King and Halbert, 1910* (**WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Praeger, 1950* (**WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *O'Connor, 1987* (**CORK**. **KERRY**. **WICKLOW**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**).

Counties: Cork, Kerry, Wicklow (3/32).

Unpublished records and voucher specimens

CORK: R. Glengarriff (V9057), Glengarriff Woods, ♂ 12 July 1985, JPOC (NMI). **KERRY: R. Roughty** (V9371), ♂ 4 July 1973, JPOC (NMI). **WICKLOW: R. Dargle** (O2417), ♂♂♀♀ 16 August 1972, JPOC (NMI); **R. Vartry** (T2797), ♂♂ 20 July 1973, JPOC (NMI).

36. *Wormaldia occipitalis* (Pictet, 1834)

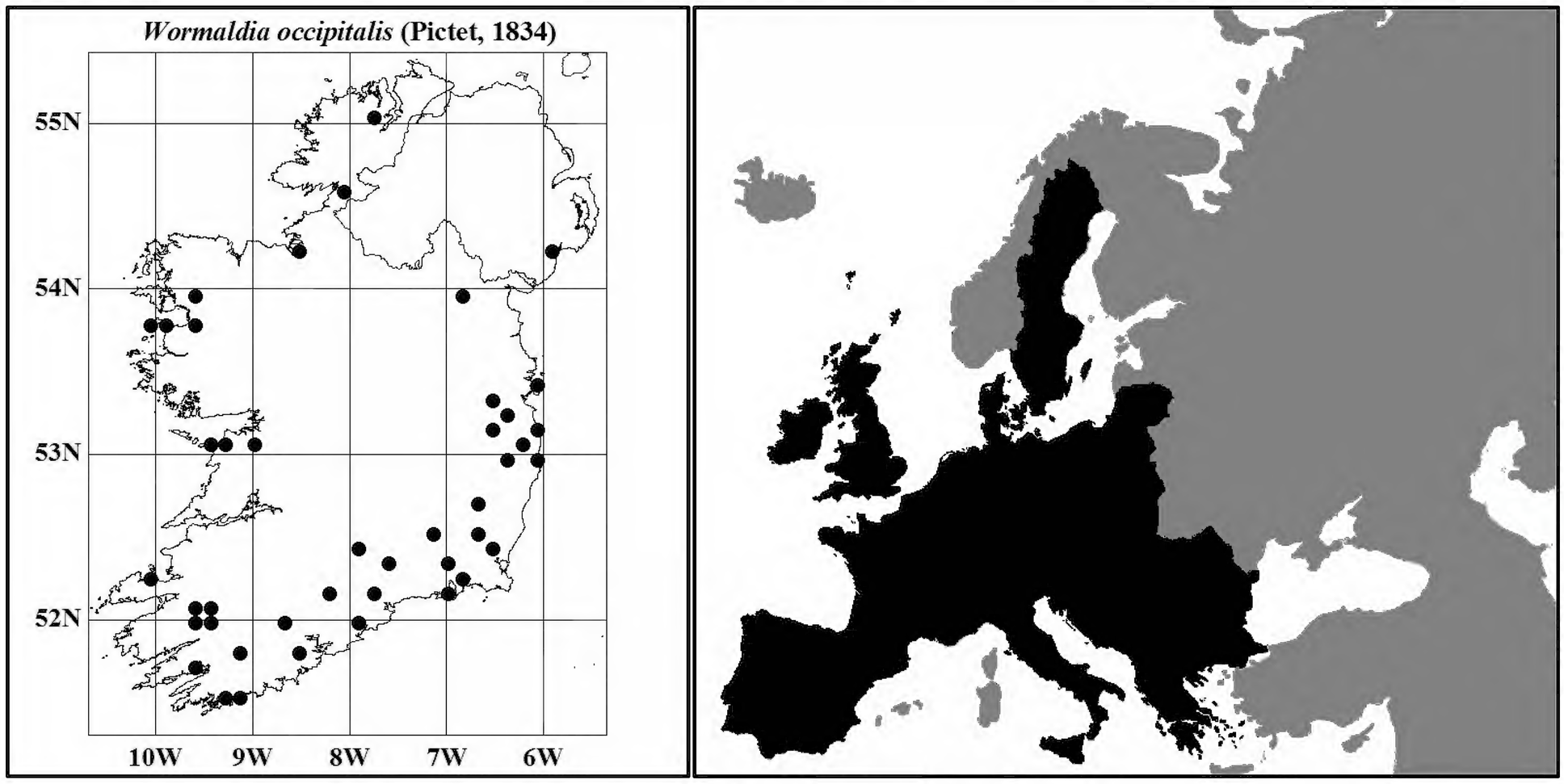
Wormaldia occipitalis is widely distributed in Ireland. The larvae occur in streams, pond outlets, marsh and tufa trickles, spring-fed trickles, on dripping rocks and other wet seepages. They spin nets which are used to filter out small-sized food particles

including diatoms. The species is widespread in much of Europe but Malicky (2005) states that revision of this taxon is urgently required and that the taxonomic value of some closely related described species is unclear.

Flight period: March–October (4 March–11 October).

Counties and 10km squares: Carlow, Cavan, Clare, Cork, Donegal, Down, Dublin, Kerry, Kildare, Kilkenny, Mayo, Sligo, Tipperary, Waterford, Wexford, Wicklow (16/32). The species is known from forty-three 10km squares (43/1019).

FIGURES 93-94. Known Irish and European distributions of *Wormaldia occipitalis*.



Published records

McLachlan, 1874-1884 (**IRELAND**). *King, 1888a* (**KERRY:** Cloghereen (V9787); Dinish (V9385); Gap of Dunloe (V8787); Horses' Glen (V9981); Torc Cascade (V9684). **MAYO:** Carrowbeg R. in Westport Demesne (L9884)). *King and Halbert, 1910* (**CORK:** Glandore (W2235). **DONEGAL:** Clonkillybeg [L.] (C1219); Coxtown (G9271). **KERRY:** Cloghereen (V9787); Dinish (V9385); Gap of Dunloe (V8787); Horse's Glen (V9981); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (Westport demesne) (L9884); Clare Island (L6985)). *Halbert, 1912* (**MAYO:** Clare Island (L6985); Louisburgh (L8080); Westport (L9984)). *Kimmins, 1965* (**IRELAND:** western). *Hickin, 1967* (**IRELAND:** western). *Hazelton, 1974a, b* (**CLARE:** Doolin Cave System (R0898), Fisher Street Pot, larva 200ft [61m] downstream in pool; Poulnagollum (M1604), 700ft [213m] downstream from Muddy Link). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**IRELAND:** widespread). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers [probably washed in from a stream]). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *Gammell, 2011* (**WEXFORD:** Artramon Stream, Edenvale (T0427); Crory Lower Stream, Edenvale (T0327)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Hancock, 2014* (**DOWN:** Marshes (J3631)). *Anon., 2015a* (**DUBLIN:** Howth Head (O2738)).

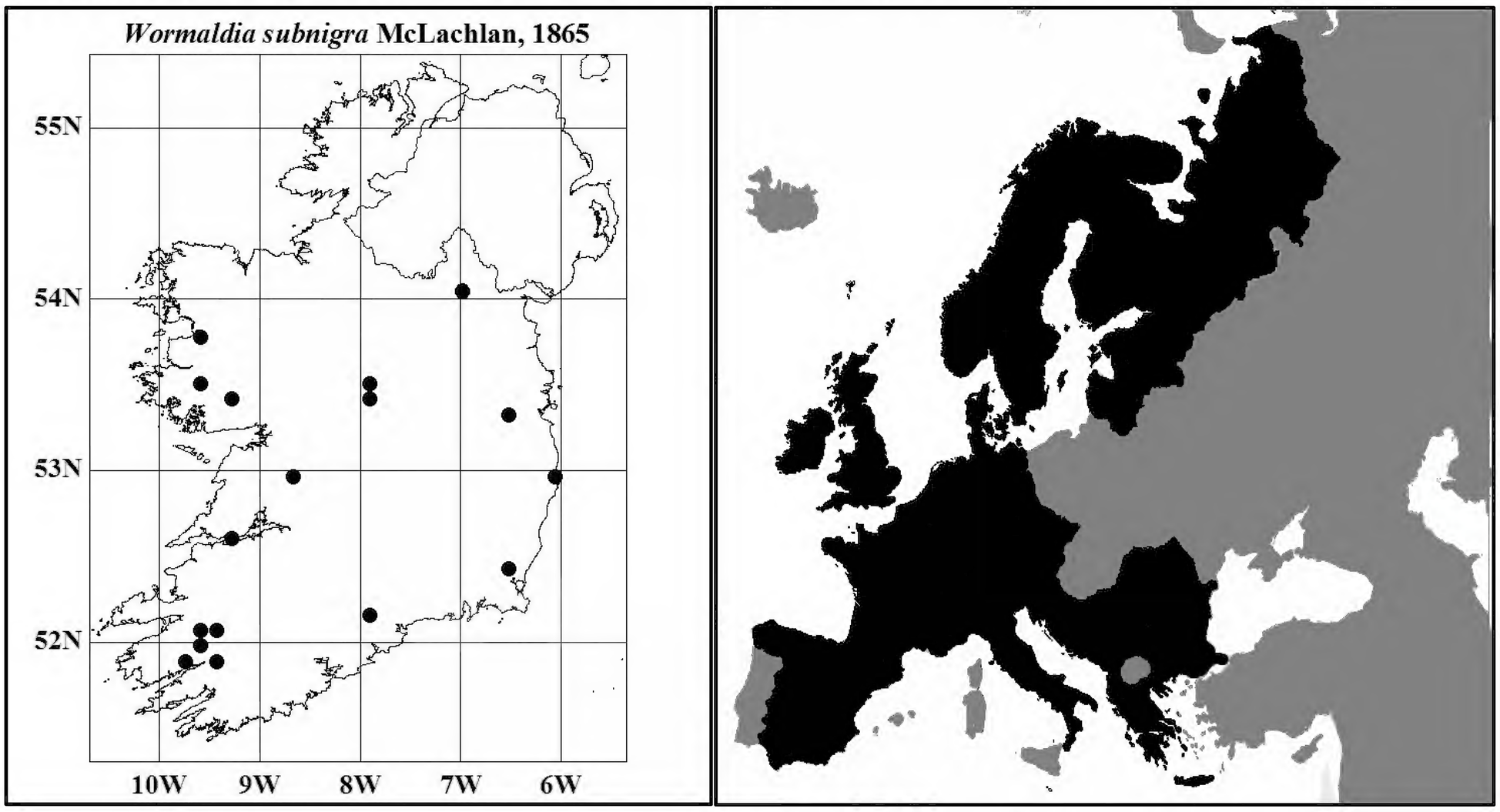
Unpublished records and voucher specimens

CARLOW: Altamont Gardens (S8665), outlet of ornamental pond, ♂5♀♀ 9 June 1991, JPOC/MAOC, det. JPOC. **CAVAN: Dún an Rí** (N7997), stream, ♂♂♀♀ 13 June 1996, JPOC (NMI). **CLARE: Cooleabeg** (M1602), stream, Burren, ♂ 23 May 1985, JPOC/MAOC, det. JPOC (NMI); **Slieve Carran** (M3204), Burren, stream side hazel *Corylus* scrub at cliff face, ♂ 11 September 1986, MCDS, det. JPOC (NMI). **CORK: Glandore** (W2235), ♂, conf. JPOC (NMI); **Glengarriff** (V9256), adult July 1947, BPB, det. JRH; **Glinny, Riverstick** (W6658), seasonal streams/ponds in alder woods, MT ♀ 8-28 June 2005, MCDS, det. JPOC; **L. Allua** (W1965), devac ♂ 30 May 1985, KGMB, det. JPOC; **L. Hyne** (W0927), wet seepage, ♂♂ 12 July 1999, PA, det. JPOC; **R. Araglin** (R8703), larvae 1988-1990, NS; **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI). **DONEGAL: Kilmacrenan** (C1420), ♂ 10 August 1888, [JJFXK], conf. JPOC (HMAG), 14♂♂ 13 July 1891, [JJFXK], misidentified as *Wormaldia subnigra* (HMAG). **DOWN: Newcastle** (J3631), marshes, ♂ 22 July, ♂ 23 July & ♀ 2 August 1912, JJFXK, det. JPOC (HMAG); **Tollymore National Park** (J3532), stream, 2♂♂ 22 June 2014, JPOC (NMI). **DUBLIN: Bohernabreena** (O0921), stream, larva & ♀ pupa 11 June 2015, JPOC/MAOC, det. JPOC. **KERRY: Blue Pool** (V9786), R. Cloghereen, 5♂♂♀ 30 August 1987, JPOC; **Galway's Bridge** (V9180), ♂♀ 31 May 1995, JPOC; **Kenmare Road** (V9484), dripping rocks opposite Muckross Lake, ♂♀ 31 May 1995, JPOC; **Killarney**, ♂♂♀ 8a August 1887, JJFXK, conf. JPOC (NMS), ♂ 6 August & ♂ 8A August 1887, [JJFXK], conf. JPOC, RMCL Coll. (BMNH), ♂ 20 July, 3♂♂ (2♂♂ misidentified as *Wormaldia subnigra*) 24a July, 2♂♂ 24a July (♂ misidentified as *Wormaldia subnigra*) & ♂ 28 July 1877, JJFXK, ident. or conf. JPOC (NMI), adult July 1946, BPB, det. JRH; **L. Slat** (Q6008) [corrected], Stadbally, adult 13 September 1982, EGH, det. JRAG (per IDW); **mountain stream** (V8979), flowing into L. Looscaunagh, ♂♂ 11 October 1972, JPOC (NMI); **O'Sullivan's Cascade** (V9188), shore of Lower Lake, 2♂♂ 27 August 1987, JPOC; **R. Cloghereen** (V9786), near Blue Pool, ♂♂ 28 May 1995, JPOC; **stream** (V9385), at Dinish, 3♂♂ 31 May 1995, JPOC; **Torc Cascade** (V9684), 2♂♂ 28 & ♂♂ 29 May 1974 (NMI), JPOC. **KILDARE: Louisa Bridge** (N9936), small trickles and streams in marshy ground, ♂♂♀♀ 22 August 1982, JPOC/MAOC, det. JPOC. **KILKENNY: Woodstock House** (S6437), Inistioge, ♂ 24 July 1987, JPOC. **MAYO: Clare Island** (L6985), ♂ June 1909, det. KJM, conf. JPOC (NMI). **SLIGO: Knocknarea Glen** (G6333), near Strandhill, beside tufa trickles, ♂ 4 March 1985, JPOC (NMI), 2♂♂ 26 August 1992, JPOC. **TIPPERARY: Glencarra Wood** (S0326), small stream, ♂ 16 August 2000, JPOC. **WATERFORD: Colligan R.** (S2205), stream entering, ♂ 15 August 2000, JPOC; **Glasha River** (S3022), ♂ 27 May 1997, JPOC/MAOC, det. JPOC; **Glendine Bridge** (X0782), ♂ 16 May 1985, KGMB; **Portally Cove** (X6799), stream, ♂ 24 May 1997, JPOC; **The Woods** (S6800), small stream, Dunmore East, larvae & ♂♂♀♀ 11 April 1996, JPOC. **WEXFORD: J. F. Kennedy Park** (S7218), 2♂♂ 20 August 1996, JPOC, (S7219),

streams, ♂♀ 7 July 2014, JPOC; **Killoughrim Forest** (S9041), stream, 8♂♂ 27 May & ♂ 4 June 1987, ♂ 4 April 1988, ♂ 3 July 2014, JPOC/MAOC, det. JPOC; **Oaklands Wood** (S7125), stream, 2♀♀ pupae & 3♂♂ 29 June 2014, JPOC/MAOC, det. JPOC; **R. Boro** (S9636), stream entering river at Soldiers Hole, 7♂♂ 23 July 2015, JPOC/MAOC, det. JPOC (NMI); **Tintern Abbey** (S7910), river, 2♂♂ 15 June 1990, JPOC, stream, 5♂♂2♀♀ 1 July 2014, JPOC/MAOC, det. JPOC. **WICKLOW: Devil's Glen** (T2499), ♂ 7 August 1990, JPOC/MAOC, det. JPOC; **Glen of the Downs** (O2611), ♂♂♀♀ 22 August 1988, JPOC; **stream** (N9911), near Lackan, larva 10 March 1978, JPOC (NMI); **tributary of the Avonbeg** (T1487), Glenmalure, adult 29 July 1946, adult 30 August 1947, JRH; **Vartry R.** (T2797), 2♂♂ 22 May (NMI), 2♂♂ 22 April & ♂ 20 July 1973, JPOC (NMI).

37. *Wormaldia subnigra* McLachlan, 1865

FIGURES 95-96. Known Irish and European distributions of *Wormaldia subnigra*.



Wormaldia subnigra is widely distributed in Ireland. A record by King from County Donegal in King and Halbert (1910) proved to be erroneous so the species has yet to be found in the north of the island. The larvae occur in streams and rivers. They spin nets which are used to filter out small-sized food particles including diatoms. The species is widespread in Europe but has a discontinuous distribution.

Flight period: July–October (4 July–12 October).

Counties and 10km squares: Cavan, Clare, Dublin, Galway, Kerry, Mayo, Waterford, Westmeath, Wexford, Wicklow (10/32). The species is known from seventeen 10km squares (17/1019).

Published records

King, 1888a (**DUBLIN:** Lucan Demesne (O0235) [R. Liffey]. **GALWAY:** Ma'am Burn (L9653). **KERRY:** Cloghereen (V9787); Gap of Dunloe (V8787); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084); Croft Laoghs (L9884). **WESTMEATH:**

Ballykeeron [Ballykeeran] (N0744); Glasson (N0947)). *King and Halbert, 1910* (DONEGAL: Clonkillybeg [L.] (C1219) [misidentification, the specimens are *Wormadia occipitalis*]. **DUBLIN:** Lucan demesne (O0235) [R. Liffey]. **GALWAY:** Maam R. (L9653). **KERRY:** Cloghereen (V9787); Gap of Dunloe (V8787); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084); Croft L. (L9884). **WATERFORD:** Glenshelane (S1203); Salterbridge (S0800) near Cappoquin. **WEXFORD:** Edenvale (T0427) [R. Sow]). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Mosely, 1930* (**GALWAY:** Oughterard (M1343)). *Kimmins, 1965* (**IRELAND**). *Hickin, 1967* (**IRELAND**). *Fahy, 1972a* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**CAVAN**. **KERRY**. **WESTMEATH**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585)).

Unpublished records and voucher specimens

CAVAN: R. Annalee (H6709), ♂ 1 September & 2♂♂ 30 September 1972 (NMI), JPOC. **CLARE: R. Bleach** (R5795), 2♂♂ 13 July 1973, JPOC; **R. Cloon** (R1656), 2♂♂ 29 August 1973, JPOC (NMI). **DUBLIN: Lucan** (O0335) [R. Liffey], ♂ 25 August 1888, [JJFXK], conf. JPOC (HMAG). **GALWAY: Oughterard** (M1343), ♂ 3-9 August 1926, MEM, conf. JPOC (BMNH). **KERRY: Killarney**, ♂ August 1887, KJM, conf. JPOC (on slide) (NMS); **R. Blackwater** (V7970), 2♂♂ 4 July 1973, JPOC; **R. Flesk** (W0387), ♂ 5 September 1972, JPOC; **Roughty R.** (V9873), ♂ 26 August 1973, JPOC; **Torc Cascade** (V9684), 4♂♂♀ 26 August 1973, JPOC (NMI); **Torc stream** (V9684), Muckross Lake, ♂ 24 August 1973, JPOC. **WATERFORD: Cappoquin** (X0999), ♂ 21 July 1902, JJFXK, conf. JPOC (HMAG). **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂♂♀♀ 8a August & 10b August 1888, JJFXK, conf. JPOC (NMS). **WEXFORD: Wexford** [Edenvale (T0427) [R. Sow]], ♂ 16 July 1902, JJFXK, conf. JPOC (HMAG). **WICKLOW: Vartry R.** (T2797), 4♂♂ 20 July 1973, JPOC.

ECNOMIDAE

38. *Ecnomus tenellus* (Rambur, 1842)

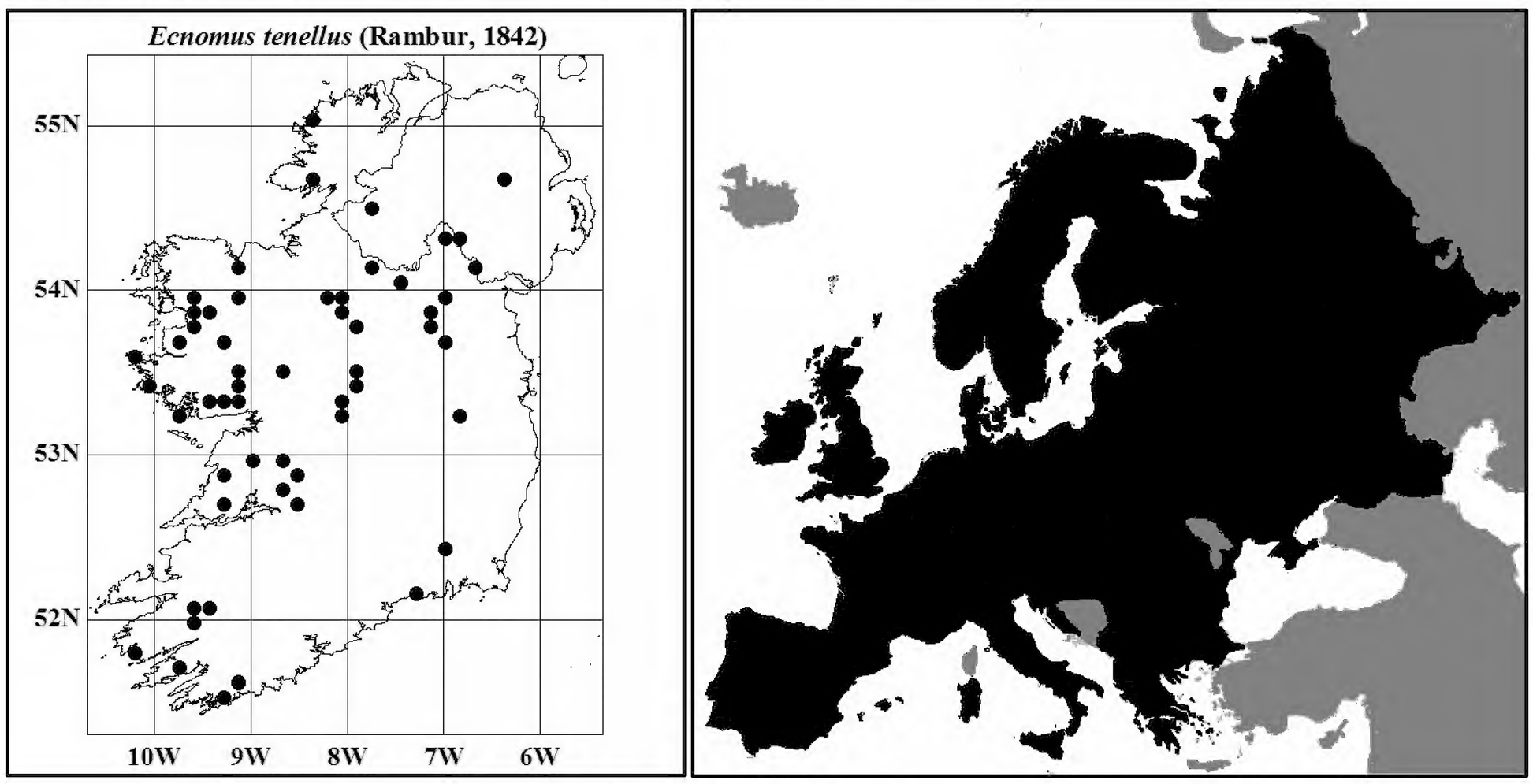
Ecnomus tenellus is widely distributed in Ireland and mainly occurs in lakes. However, the species may be also found in canals and rivers. The larvae construct funnel-shaped capture nets, loosely woven of fine silky threads and associated with silky tunnel-shaped retreats. In the littoral zone of lakes, the capture nets and retreats are normally placed in crevices underneath or between stones. Once in contact with the fine threads of the capture net, a prey is rapidly attacked by the larva, seized by its mandibles, and quickly pulled into the retreat for consumption. Feeding experiments have shown that partial consumption of the soft, fleshy parts of the prey often occurs, at least when relatively large invertebrate prey are captured. Whereas large prey is

normally fragmented, relatively smaller prey is often eaten whole. In Denmark, a wide spectrum of invertebrate prey was identified. With its predacious net-spinning behaviour, *E. tenellus* may compete with co-existing polycentropodid species. There is evidence that *E. tenellus* is favoured by eutrophication in Danish lakes at the expense of polycentropodids (Wiberg-Larsen, 1993). The species is widespread in Europe.

Flight period: June–October (3 June–1 October).

Counties and 10km squares: Antrim, Cavan, Clare, Cork, Donegal, Fermanagh, Galway, Kerry, Kildare, Leitrim, Limerick, Longford, Mayo, Meath, Monaghan, Roscommon, Waterford, Westmeath, Wexford (19/32). The species is known from fifty-five 10km squares (55/1019).

FIGURES 97-98. Known Irish and European distributions of *Ecnomus tenellus*.



Published records

Morton, 1883 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* (**KERRY:** Ardagh Laogh (V9888); Ross Castle (V9488). **MAYO:** Doo (L8368), Doogan (M0094), Knappagh [Knappaghbeg] (M0080) and Prospect (L9581) Laoghs. **MONAGHAN:** Glaslough (H7241). **WESTMEATH:** Waterston [Waterstown] (N1045); Wineport (N0746) [L. Ree]). *King and Halbert, 1910* (**KERRY:** Ardagh L. (V9888); Ross Castle (V9488). **MAYO:** Doo (L8368), Doogan (M0094), Knappagh [Knappaghbeg] (M0080) and Prospect (L9581) Loughs. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **WESTMEATH:** Waterstown (N0946); Wineport (N0746) [L. Ree]). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Moriarty, 1973a* (**ROSCOMMON:** L. Key (G8000) = [G8304]). *O'Connor and Norton, 1978* (**WESTMEATH:** Coosan Point (N0446) (L. Ree)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7106)). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9191), (V9290), (V9490); Muckross Lake

(V9685)). *Murphy and Carter, 1984* (**ANTRIM:** L. Neagh (J0485)). *O'Connor, 1987* (**IRELAND:** widespread). *O'Grady and King, 1992* (**MAYO:** Bunree R. (G3120)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Donohue et al., 2009* (**IRELAND**). *Atalah et al., 2010* (**IRELAND**). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**GALWAY:** lowland lakes (M0430), (M0329), (M0929), (M0927)). *Little and Free, 2013* (**CAVAN:** L. Ramor (N6285). **DONEGAL:** L. Waskel (B7316); Namanfin [lake top of Corker R. near Ardara] (G7983). **GALWAY:** Aughrusbeg L. (L5558); Ballynakill L. (L8622); Glenicmurren [Glenicmurrin] L. (M0031); L. Anaserd (L6044); L. Maumeen [the grid reference of L6141 appears to be in the sea and not included]; Ross Lake (M1936). **KERRY:** Glanmore Lake (V7755). **MAYO:** Islandeady L. (M0988); L. Carra (M1871); L. Cullin (G2303). **ROSCOMMON:** L. Drumharlow (G9001); L. Nablahy (M9588)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Lower L. Erne (H1758)).

Unpublished records and voucher specimens

WEST IRELAND: 11 adults 1886, JJFXK, RMCL Coll. (BNNH) (also 3 adults labelled Ireland).

CAVAN: Drummany Lake (H3712), 5♂♂2♀♀ 4 August 1973, JPOC; **L. Brackley** (H1921), ♀ 4 August 1973, JPOC; **L. Oughter** (H3308), 3♀♀ 4 August 1973, JPOC (NMI); **L. Ramor** (N5987), 2♂♂ 2 August 1973, JPOC (NMI); **L. Sillan** (H7106), 3♂♂ 27 July 1971, 8♂♂♀ 9 August & ♀ 11 August 1972, lamp 5♂♂ 27 July 1972, (H6906), lamp, ♂♀ 11 August (NMI) & 6♂♂2♀♀ 30 August 1972, 6♀♀ 31 July 1973, LT 2♂♂36♀♀ 31 July-1 August 1973, JPOC. **CLARE: Knockalough** (R1463), LT 3♂♂2♀♀ 8-9 July 1973, JPOC; **L. Cullaun** (R3290), larva 1996/1997, JW; **L. Derg** (R6979), LT ♀♀ 2-3 September 1973, JPOC; **L. Doon** (R5674), ♂ 12 July 1973, JPOC; **L. Graney** (R5691), ♀ 3 September 1973, JPOC, larvae 1996/1997, JW; **L. Moghna** (R1384), ♂ 30 August 1973, JPOC. **CORK: Ballin L.** (W1938), ♂♂ 12 August 1999, PA, det. JPOC (NMI); **L. Abisdealy** (W1331), near Skibbereen, MVLT ♂2♀♀ 15-16 August 1992, KGMB, det. JPOC. **GALWAY: Hackett L.** (west side) (M3049), Lisdonagh, MT 2♂♂ 12-26 June 2014, JC, det MG; **L. Corrib** (M2642), Keekill, LT 5♀♀ 30 July 2003, KGMB, det. JPOC, (M2531), Lower, ♂♀ 7 July 1980, BC, conf. JPOC (NMI), (M2531), Hurnies, larva 12 July 1982, DOK, conf. JPOC, (M2741), Cloonmore, LTS ♀ 22 July & 9♂♂4♀♀ 6 August 2014, MG/CC, det MG; **R. Shannon** (M9816), larva 26 July 1972, AFF, det. JPOC; **Summerville L.** (M6049), picnic area, ♂ 25 July 2012, MG. **KERRY: Killarney**, ♂♂♀♀ 25a June, 2 July & 12 July 1887, JJFXK (NMS), 2♂♂ 25a June & ♂ 28 June, ♀ 2 July & ♂ 12 July 1887, JJFXK, conf. JPOC (NMI); **L. Leane** (V9686), Castlelough Bay, IETS 2♂♂ 4 August & ♀ 1 September 1972, UCD, det. JPOC, (V9291), Hotel Europe, ♂2♀♀ 5 September 1972, (V9291), Golf Course, 7♂♂5♀♀ 24 August 1973, JPOC,

(V9389), Library Point, larva July 1977, ANS, det. JPOC, (V8990), Laune exit shore, larva August 1972, EJW (NMI); **Muckross Lake** (V9685), IETS ♂♀ 4 August 1972, 9♂♂19♀♀ 21 June-14 July 1973, UCD, det. JPOC (NMI), (V9685), Dundag Bay, IETS ♀♀ 1 September & ♂10♀♀, 12 July-1 October 1972, 3♀♀ 3 June & 2♂♂2♀♀ 17 August 1973, grabs 1.7-3m 14 larvae, UCD, det. JPOC (NMI), larva July 1972, EJW, (V9684), Torc Shore, 2♂♂ 24 August 1973, JPOC; **O'Sullivan's Cascade** (V9188), ♂ 1 October 1973, JPOC. **KILDARE: near Robertstown** [Grand Canal] (N7823), ♂ 3 July 1977, MDCW, det. JPOC. **LEITRIM: L. Boderg** (N0192), larva 19 July 1972, AFF, det. JPOC; **L. Corry** (M9497), dredge 2 larvae 19 July 1972, AFF, det. JPOC; **R. Shannon** (G9302), dredge 4 larvae 19 July 1972, AFF, det. JPOC, (M9399), near Carrick on Shannon, dredge 7 larvae 20 July 1972, AFF, det. JPOC. **LIMERICK: R. Shannon** (R6663), Castleconnell, LT 4♂♂♀ 12-13 July 1973, JPOC. **LONGFORD: L. Forbes** (N0881), dredge 6 larvae 20 July 1972, AFF, det. JPOC; **R. Shannon** (N0684), north of L. Forbes, 3♂♂3♀♀ 16 July 1978, JPOC. **MAYO**: **Knappagh Loughs** [Knappaghbeg] (M0080), ♂ July 1886, JJFXK, conf. JPOC, Harwood Coll. (BMNH); **Prospect Loughs** (L9581), adult July 1886, JJFXK (BMNH); **Westport** (L9984), 13♂♂4♀♀, JJFXK, conf. JPOC (NMI). **MEATH: Trimblestown R.** (N6967), larvae June 1989, DAG/JML, det. JML. **MONAGHAN**: **Emyvale** (H6843), ♂ 20-30 July [1885-6], Morton Coll. (NMS); **Glasslough** (H7241), ♂♂, Morton Coll. (NMS); **L. Muckno** (H8319), 2 larvae 1996/1997, JW. **ROSCOMMON: R. Shannon** (M9830), larva 13 July 1972, AFF, det. JPOC. **WATERFORD: Ballyscanlan L.** (S5403), larva & ♂2♀♀ 8 July 2014, JPOC/MAOC, det. JPOC. **WESTMEATH: Coosan Point** (N0446), 2 larvae & 6 June 1977, JPOC (NMI). **WEXFORD: Mount Garrett Wood** (S7230) [R. Barrow], ♂ 17 June 1982, JPOC/MAOC, det. JPOC (NMI).

POLYCENTROPODIDAE

39. *Cyrnus flavidus* McLachlan, 1864

Cyrnus flavidus is found in lakes and ponds. It is widely distributed in Ireland with the exception of the east and south-east. The larvae construct coarse-meshed tube shaped nets which may be on plant leaves. These act as snares to catch swimming, drifting or walking live prey. The species is widespread in northern Europe.

Flight period: May–September (20 May–3 September).

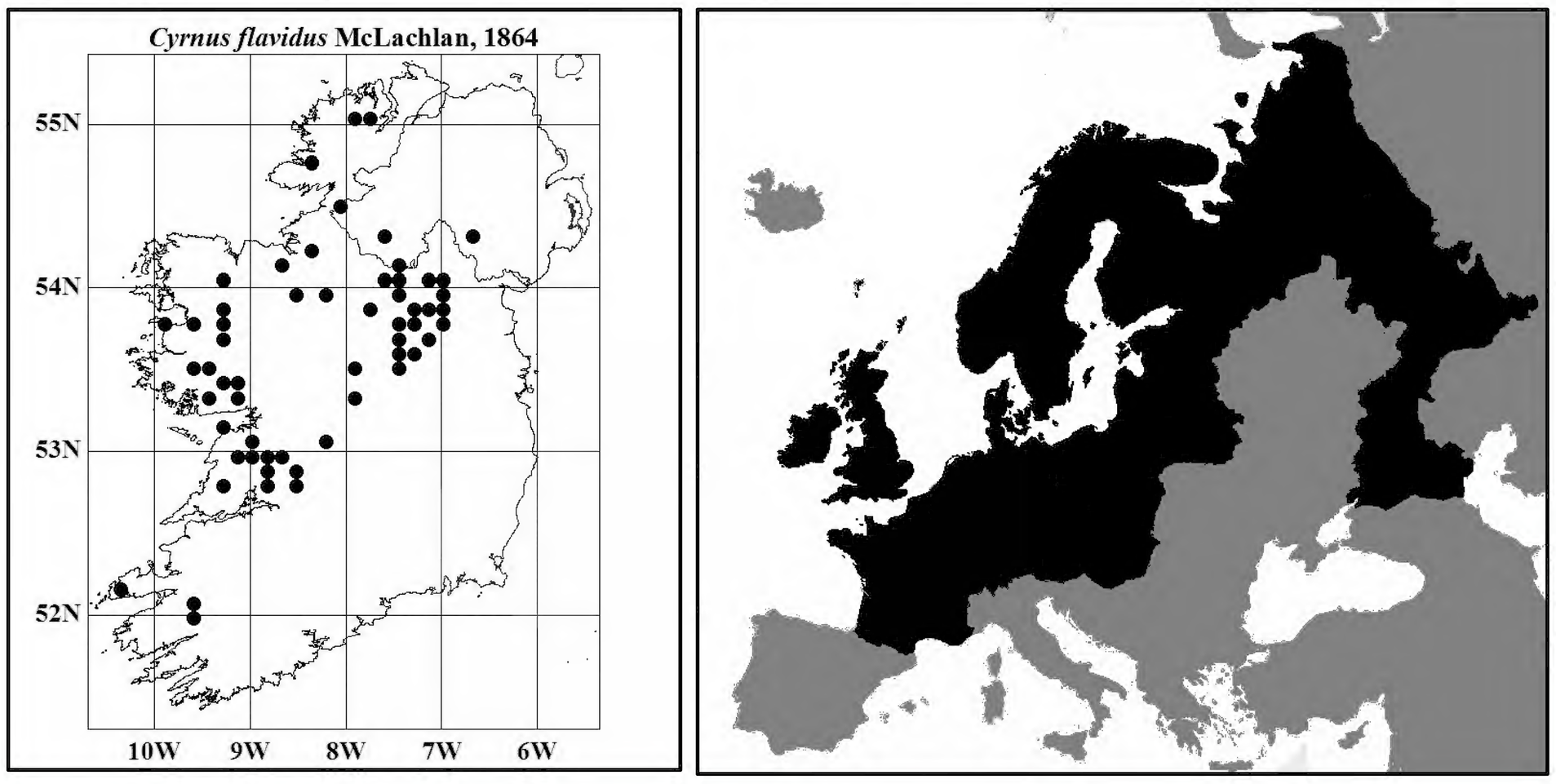
Counties and 10km squares: Armagh, Cavan, Clare, Donegal, Fermanagh, Galway, Kerry, Leitrim, Mayo, Meath, Offaly, Roscommon, Sligo, Tipperary, Westmeath (15/32). The species is known from fifty-eight 10km squares (58/1019).

Published records

King, 1888a (**GALWAY:** Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Gap of Dunloe (V8787). **MAYO:** Knappagh [Knappaghbeg] (M0080) and Prospect (L9581) Laoghs. **WESTMEATH:** Coosan Point (N0446) [L. Ree]). *King and Halbert, 1910* (**ARMAGH:** Lowry's L. (H9144). **DONEGAL:** Ardara (G7390)

[Owntocker R.], Loughs Fern (C1824), Mnafin (C0919) and Sproule (C1018) (etc., Kilmacrennan district). **GALWAY:** Maumwee [Manwee] L. (L9748). **KERRY:** Gap of Dunloe (V8787). **MAYO:** Knappagh [Knappaghbeg] (M0080) and Prospect (L9581) Loughs. [**WESTMEATH]:** Coosan Point (N0446) [L. Ree]). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Moriarty, 1972a* (**GALWAY:** L. Corrib (M1244); (M1245); (M1445)). *Moriarty, 1973a* (**CAVAN:** Belturbet Lakes (H3020) = [H3722]; Cootehill Lakes (M6010) = [H6016]. **GALWAY:** L. Corrib (M0050), (M2030) = [M2434]. **MAYO:** L. Conn (G1010) = [G1511]. **ROSCOMMON:** L. Key (G8000) = [G8304]. **SLIGO:** L. Gill (G7030) = [G7232]). *Moriarty, 1973b* (**CAVAN:** Dromore L. (H6116); Erne lakes (H3722). **MAYO:** L. Conn (G1511). **SLIGO:** L. Gill (G7232)). *Moriarty, 1974* (**CLARE:** L. Fin (R4369). **ROSCOMMON:** L. Key (G8304). UNKNOWN COUNTY**:** waters upstream of L. Derg). *Speight, 1977* (**WESTMEATH:** Coosan Pt [Coosan (N0446)]). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H6907); (H7106); (H6906)). *O'Connor, 1987* (**IRELAND:** central, south-western and western). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Millane, 2006* as *Crynus* (**MAYO:** L. Carra (M1777)). *Donohue et al., 2009* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lake (R5088), 273m; **GALWAY:** lowland lakes (M0329), (M0229), (M0929)). *Little and Free, 2013* (**CAVAN:** Derrycassan L. (H2212). **CLARE:** L. Cullaun (R3290); L. Naminna (R1871). **DONEGAL:** L. Golagh (G9665). **LEITRIM:** L. Sallagh (N1691). **SLIGO:** Templehouse L. (G6117). **WESTMEATH:** L. Derravaragh (N4066)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Mill L. (H2438)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Mill L. (H2438)).

FIGURES 99-100. Known Irish and European distributions of *Cyrnus flavidus*.



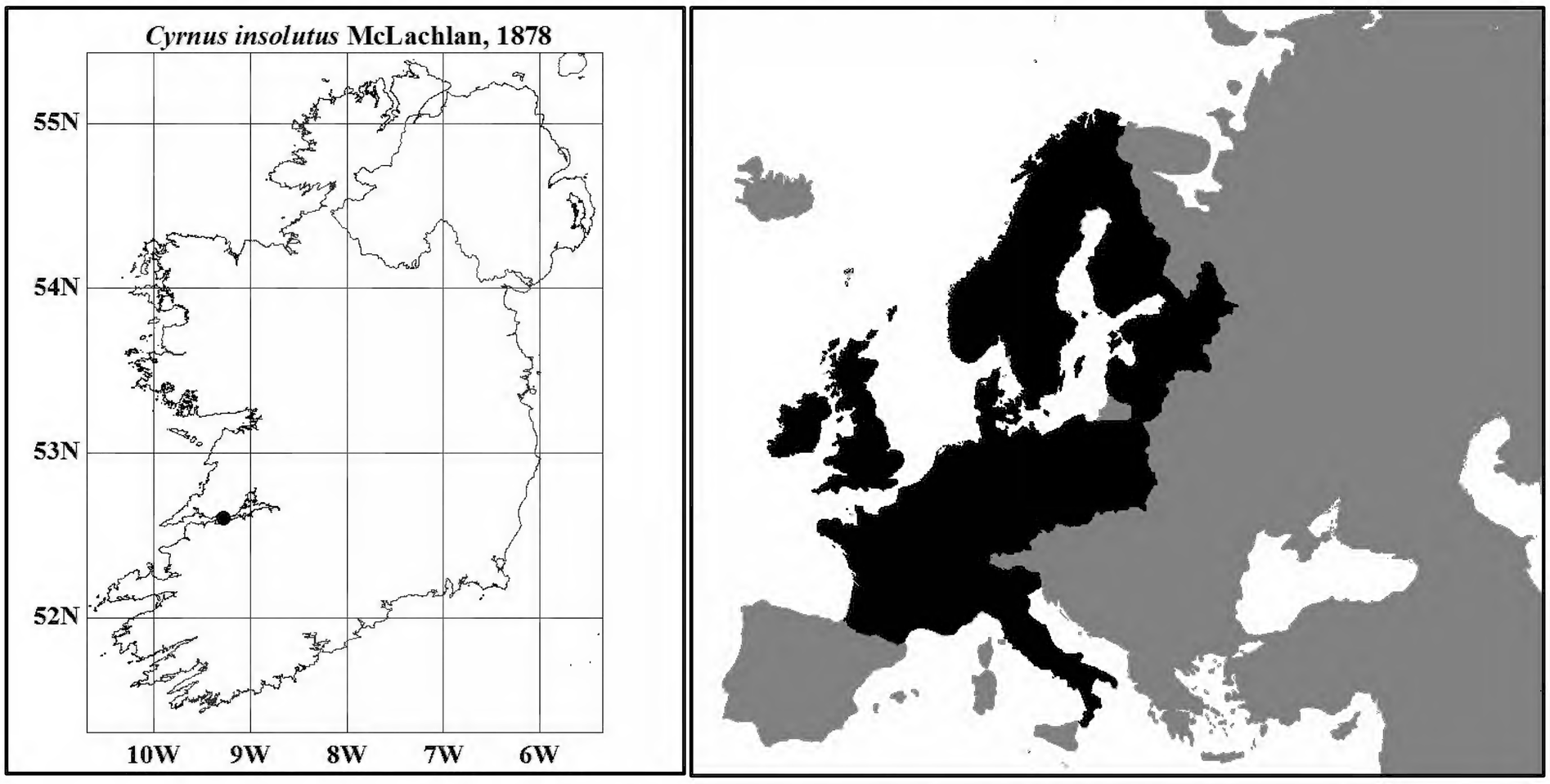
Unpublished records and voucher specimens

IRELAND: 2 adults, RMCL Coll. (BMNH).
WEST IRELAND: 1886, JJFXK, RMCL Coll. (BMNH).
CAVAN: Corrakane L. (H4000), small lake, ♂ 16 June & LT 19♂♂ 4-5 August 1973, JPOC (NMI); **L. Cuilcagh** (N6389), 2♂♂ 20 May 1974, 5 larvae exposed rocky shore, 5 larvae sheltered rocky shore & larva reed bed, 29 March 1973, JPOC; **L. Drunad** (pond) (H7102), 2 larvae ♀ 1 August 1973, JPOC (NMI); **L. Mullagh** (N6785), ♂ 1 August 1973, ♂ 20 May 1974, 43 larvae exposed rocky shore, 25 larvae sheltered rock shore & 11 larvae reed bed, 3 April 1973, JPOC, larvae 1996/1997, JW; **L. Oughter** (H3308), ♂ 4 August 1973, JPOC (NMI); **L. Ramor** (N6087), 6♂♂ 2 August 1973, JPOC; **L. Sheelin**, adult June 1946, JRH, (N4686), Crover, 2♂♂ 6 August 1990, JPOC, IETS 1973/1974: (N4183), Kelly's Bay, adults, (N4685), Crover, 245 adults, (N4586), near Arley Point, 4 adults, PG; **L. Sillan,** larva exposed rocky shore & 3 larvae reed bed, 26 March 1973, (H6906), 2♂♂ May 1971, 7♂♂ 27 July (NMI) & 9♂♂♀ 30 August 1972, larvae 1974 (NMI), LT 15♂♂ 31 July-1 August 1973, (H7007), 4♂♂ 20 May 1974, (H7106), 3♂♂ 9 & ♂ 11 August 1972, JPOC; **R. Barora** (N6893), LT ♂ 1-2 August 1973, JPOC. **CLARE: Caher R.** (M1707), near Ballyvaughan, adult 31 May 1971, ECP-C (per IDW); **Doolough** (R1171), 5♂♂♀ 9 July 1973, JPOC; **Killaloe** (R7072), adult 17 June 1913, CJM, det. JRAG (IM) (per IDW); **L. Bunny** (R3796), ♂ 31 August 1973, JPOC; **L. Carra** (M1668), near Keel Bridge, 1 definite larva, other larvae with transparent heads showing musclature underneath, ♂ 21 May 1977, JPOC; **L. Derg** (R6979), LT 4♂♂ 2-3 September 1973, (R6878), ♂ 13 July 1973, JPOC; **L. Doo** (R1171), 4♂♂ 29-30 August 1973, JPOC; **L. Graney** (R5691), ♂ 3 September 1973, JPOC, larvae 1996/1997, JW; **L. Inchiquin** (R2789), LT ♂ 31 August-1 September 1973, JPOC; **O'Brien's Big Lake** (R4182), ♂ 11 July 1973, JPOC; **R. Fergus** (R2689), exiting L. Inchiquin, ♂ 1 August 1999, JPOC. **DONEGAL: Kilmacrenan** (C1420), adults July & August 1891, JJFXK (TMM) (per IDW). **FERMANAGH: Mill L.** (H2438), near Bellanaleck, LT ♂ 26 August 2014, LT 17♂♂ 1 September 2015, JPOC/MAOC, det. JPOC (NMI). **GALWAY: L. Corrib** (M2341), Middle, ♂♂♀ 29 May 1980, BC, conf. JPOC (NMI), (M2930), Angliham, larva 12 July 1982, DOK, det. JPOC, (M0949), Curraghduff West, Glan Road Picnic Area, LT ♂ 12 June 2015, MG/CC, det. MG; **L. Maumwee** [Manwee] (L9748), larva 1996/1997, JW. **KERRY: Galway's Bridge** (V9180), 2♂♂ 31 May 1995, JPOC; **Mount Eagle L.** (V3499), Dingle, adult 26 August 1968, anon., det T. T. Macan (per IDW). **MAYO: Castlebar** (M1188), adults May-September 1964, MK; **Louisburgh** (L8080), adult 19 July 1910, CJM, det. JRAG (IM) (per IDW); **Westport** (L9984), 2♂♂, JJFXK, conf. JPOC (NMI). **MEATH: L. Sheelin** (N4482), Goreport Bay, IETS 1973/1974 adults, PG. **OFFALY: Mongan Bog** (N0330), LT ♂ 5 July 1982, JAG, det. JPOC. **SLIGO: Castledargan Lake** [L. Dargan] (G7228), adults May-September 1964, MK; **L. Gara South** (M6997), larva 1996/1997, JW. **TIPPERARY: Gortmore** (M8500) [L. Derg],

♂ 18 June 1986, KGMB, det. JPOC (NMI). **WESTMEATH: L. Derravaragh**, IETS 1973/1974: (N4169), Coolure Bay, 3 adults, between Clinton's Bay and Crooked Wood (N4663), 2 adults, (N4168), near Derrya, adult, PG; **L. Ennell** (N4146), adult 1 June 1947, JRH, adults May-September 1964, MK; **L. Lene** (N5368), larvae 1996/1997, JW; **L. Owel** (N4158), Gaynor Point, IETS 1973/1974 adult, PG; **L. Sheelin** (N4381), off Goreport Point, IETS 1973/1974 adults, PG.

40. *Cyrnus insolutus* McLachlan, 1878

FIGURES 101-102. Known Irish and European distributions of *Cyrnus insolutus*.



Cyrnus insolutus is only definitely known from Lough Derrygeeha in Ireland. This small pond was surrounded by dense vegetation including coarse grasses and *Phragmites*, *Juncus*, *Typha*, *Equisetum*. Water lilies (Nymphaeceae) were also common. In the littoral region, the substratum between the plants was composed mainly of plant debris. Substrate samples from the littoral area yielded larvae when live-sorted (O'Connor, 1977). Presumably, the larvae spin their nets on the living plants or debris or attach them to both. In Britain, larvae have been found on rocky shores. The tube shaped nets act as snares to catch swimming, drifting or walking live prey. The adults at Lough Derrygeeha were very secretive, hiding in dense vegetation. The species is widespread in northern Europe and has been reported from Italy.

Flight period: July (8 July). Barnard and Ross (2012) give the British flight period as July–August.

County and 10km squares: Clare (1/32). The species is known from only one 10km square (1/1019).

Published records

O'Connor, 1977 (**CLARE:** L. Derrygeeha (R1556)). *O'Connor, 1978a* (**CLARE**. KERRY (error)). *Edington and Hildrew, 1981* (**CLARE:** L. Derrygeeha). *O'Connor, 1987* (**CLARE:** L. Derrygeeha [R1556]). *Edington and Hildrew, 1995* (**CLARE:** L. Derrygeeha). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *McGoff and Irvine,*

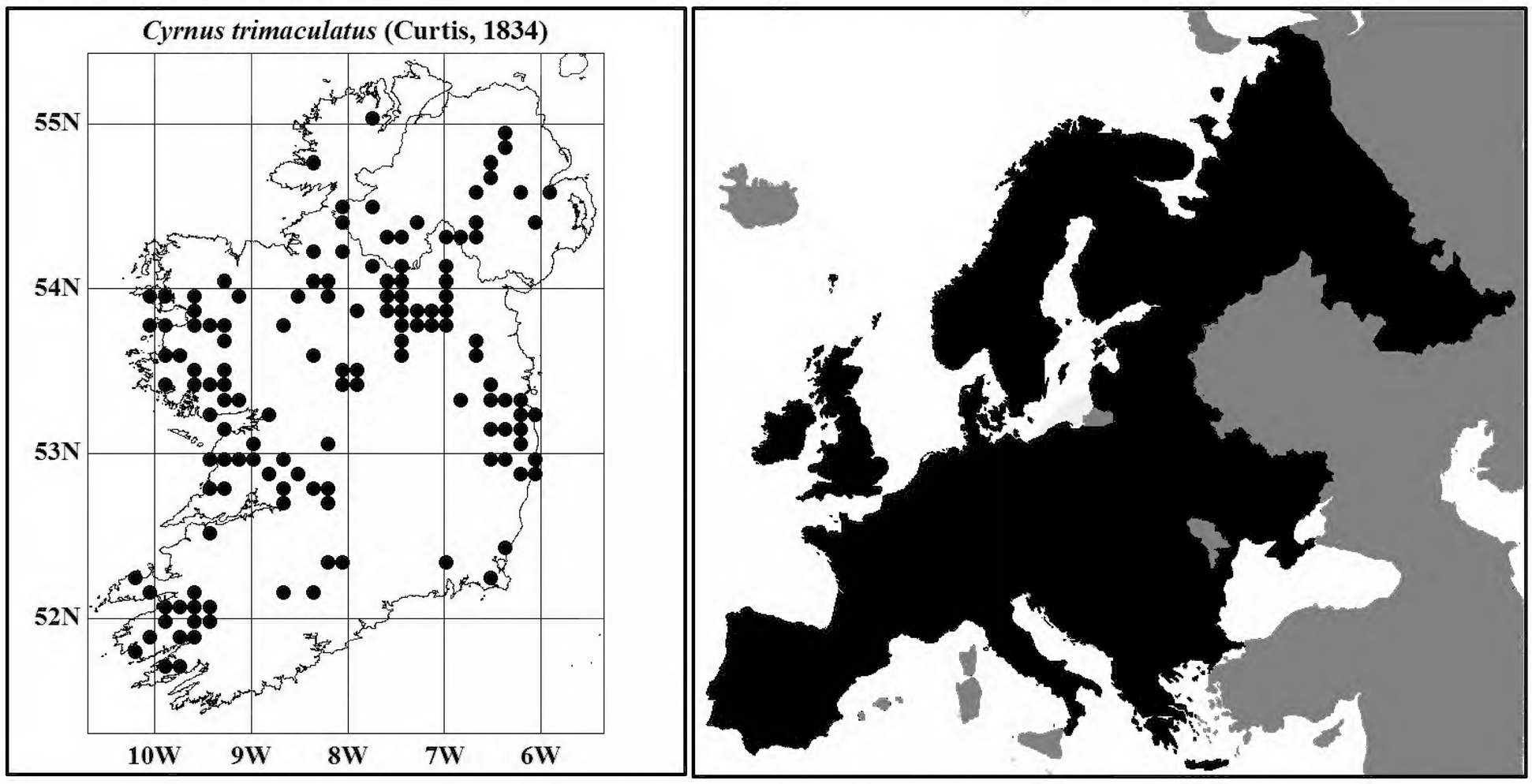
2009 (MAYO: L. Carra. Larval record requiring confirmation since *C. flavidus*, which occurs there, is not mentioned. In L. Carra, some *Cyrnus* larvae are poorly pigmented with translucent heads. Head spots are reduced or absent. Musculature may be seen through the chitin. Millane (2006) only found *C. flavidus* and *C. trimaculatus* in the lake). *O'Connor and Nelson, 2012* (**CLARE**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

CLARE: Derrygeeha L. (R1556), larvae & 9♂♂ 8 July 1973, JPOC, conf. J. M. Edington (NMI).

41. *Cyrnus trimaculatus* (Curtis, 1834)

FIGURES 103-104. Known Irish and European distributions of *Cyrnus trimaculatus*.



Cyrnus trimaculatus is widely distributed in Ireland. The larvae occur in bog pools, lakes, ponds, rivers, streams and turloughs where the larvae spin nets. These are coarse-meshed and tube shaped. They act as snares to catch swimming, drifting or walking live prey. The species is widespread in Europe.

Flight period: May–October (28 May–4 October).

Counties and 10km squares: Antrim, Armagh, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Leitrim, Limerick, Mayo, Meath, Monaghan, Roscommon, Sligo, Tipperary, Tyrone, Westmeath, Wexford, Wicklow (25/32). The species is known from 136 10km squares (136/1019).

Published records

Morton, 1883 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *McLachlan, 1885* (**DOWN:** R. Lagan (J3472)). *King, 1888a* (**DUBLIN:** Lucan (O0335) [R. Liffey]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Coppagh Glen (W0382); Denough [Deenagh] R. (V9792); Devil's Punch Bowl (V9781); Dinish (V9385); Gap of Dunloe (V8787); Horses' Glen (V9981); Ross Castle (V9488); The Glen in Deer Park

(V9792); Torc Cascade (V9684). **MAYO:** Ballin (L9987), Broad (L9992), Doogan (M0094), Kip (M0880), Knappagh [Knappaghbeg] (M0080) and Mount Brown [Kinlooey] (M0381) Laoghs; Carrowbeg R. (M0084). **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]; Yew Point (N0146) [L. Ree]. **WESTMEATH:** Bog of Allan [Allen] (N0639); Coosan Point (N0446) [L. Ree]; Wineport (N0746) [L. Ree]. **[NO COUNTY GIVEN but probably DOWN]:** R. Lagan (J3472)). *King and Halbert, 1910* (**ARMAGH:** L. Neagh, Maghery (H8342). **DONEGAL:** Ardara (G7390) [Owntocker R.]; Kilmacrennan district (C1420) [Leannan R.]. **DOWN:** R. Lagan (J3472). **DUBLIN:** Lucan (O0335) [R. Liffey]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Maumwee [Manwee] L. (L9748). **KERRY:** Devil's Punch-bowl (V9781); Gap of Dunloe (V8787); Killarney and Muckross (V9786) districts (etc.). **MAYO:** Achill (F6405), Newport (L9893) and Westport (L9984) districts. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]; Yew Point (N0146) [L. Ree]. **WESTMEATH:** Bog of Allen (N0639); Coosan (N0446) [L. Ree]; Wineport (N0746) [L. Ree]. **WEXFORD:** Johnstown Castle (T0216) [small lakes]). *Halbert, 1912* (**MAYO:** Achill Island (F6405); Louisburgh (L8080); Newport (L9893); Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Cashel Bay (L7942); Inverin (M0822); Oughterard (M1343)). *Kimmins, 1932* (**GALWAY:** Leenane [Leenaun] (L8762)). *Beirne, 1939* (**CORK:** Ballyhooly (W7298) [R. Blackwater]). *Partridge and Foy, 1972* (**MAYO:** L. Feeagh (F9600), (F9700), (L9698), (L9699), (L9799)). *Fahy, 1972a* (**MAYO:** (F9505)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Moriarty, 1972a* (**GALWAY:** L. Corrib (M1244), (M1445)). *Moriarty, 1973a* (**CAVAN:** Belturbet Lakes (H3-2-) = [H3722]; Killashandra Lakes (H3000) = [H3007]. **GALWAY:** L. Corrib (M0050), (M1040) = [M1249], (M2030) = [M2434]. **MAYO:** L. Conn (G1010) = [G1511]. **ROSCOMMON:** L. Key (G8000) = [G8304]. **SLIGO:** L. Gill (G7030) = [G7232]). *Moriarty, 1973b* (**CAVAN:** Eonish (H3308); Erne lakes (H3722); R. Erne, Belturbet (H3516). **MAYO:** L. Conn (G1511). **SLIGO:** L. Gill (G7232)). *Moriarty, 1974* (**ROSCOMMON:** L. Key (G8304)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *Speight, 1977* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan (N0446)]). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H6907), (H6906)). **WICKLOW:** L. Dan (O1502)). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Bracken, 1980b* (**MEATH**: R. Tolka (O0241), bridge upstream of Dunboyne tributary). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7186), (V7192)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake; Upper Lake [Killarney]). *Murphy and Carter, 1984* (**DERRY:** L.

Neagh (H9485)). *O'Connor, 1987* (**IRELAND:** widespread). *Carter and Murphy, 1993* (**IRELAND:** L. Neagh). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 8 out of 70 sampled sites). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 19 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* as *Crynus* (**MAYO:** L. Carra (M1777)). *Donohue et al., 2009* (**IRELAND**). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *Porst and Irvine, 2009b* (**GALWAY:** Termon turlough (R4097)). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**CAVAN:** Brackley Lake (H1921); Corglass L. (H3409); Derrybrick [Garfiny L.] (H3412); L. Ramor (N6285); Rockfield L. (H2703). **CLARE:** Doolough (R1172); L. Naminna (R1871); Muckanagh L. (R3792). **CORK:** Glenbeg L. (V7053). **DONEGAL:** L. Golagh (G9665). **GALWAY:** Ross Lake (M1936). **KERRY:** Cloonaghlin L. (V6070); Glanmore Lake (V7755); L. Ardderry (L9945); L. Nakirka (V7389). **LEITRIM:** L. Rinn (N0994). **MONAGHAN:** Drumlona L. (H6317)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Flesk (V9789); R. Galey (R0139)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Dunnstown Burn (D0409); R. Braid (D1003); R. Clogh (D0613); R. Crumlin (J1976); R. Main (D0513). **DERRY (LONDONDERRY):** R. Moyola (H9590). **DOWN:** (J2551). **FERMANAGH:** Lisnabane Burn (H3744). **TYRONE:** R. Ballinderry (H8376); R. Blackwater (H8555); R. Cleen (H4748)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R8959), (R8758), (R8456); R. Mulkear (R8667), (R8467), (R8168); R. Tar (R9117), (R9416), (R9617)). *Baars et al., 2014* (**IRELAND:** recorded in 3 of 12 upland peatland lakes). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Lower L. Erne (H1758); Upper L. Erne (H2339)). *Anon., 2015a* (**ROSCOMMON:** L. Key Forest Park (G8404)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** R. Sillees (H2341)).

Unpublished records and voucher specimens

WEST IRELAND: adult 1886, JJFXK, RMCL Coll. (BMNH).

ARMAGH: L. Neagh (H8342), Maghery, ♂ 4 August 1890, WFJ, conf. JPOC (NMI). **ANTRIM: Belfast** (J3473), ♂ 1885, CGB, conf. JPOC (BMNH). **CAVAN: Corrakane L.** (H4000), small lake, 3♂♂ 3 August 1981, JPOC/MAOC, det. JPOC; **L. Cuilcagh** (N6389), ♂♀ 10 August & 2♂♂♀ 2 October 1972, JPOC; **L. Drummany** (H3712), 14♂♂3♀♀ 4 August 1973, JPOC; **L. Gowna** (N2889), larva 1996/1997, JW; **L. Moneen** (G9828), ♀ 3 August 1973, JPOC; **L. Mullagh** (N6785), 4♂♂ 10 August & ♂ 4 October 1972, larva reed bed, 3 April 1973, JPOC; **L. Oughter** (H3308), ♂ 4 August 1973, JPOC; **L. Ramor** (N6087), 9♂♂9♀♀ 10 August 1972, 19♂♂6♀♀ 2 August 1973, JPOC; **L. Sheelin** (N4786), ♂♀ 5 August 1973, (N4285), Kilnahard, ♂ 1 August 1986, JPOC, IETS 1973/1974: (N4384), Kilnahard Bay, 2 adults, (N4685), Crover, 63 adults, (N4586), near Arley Point, 9 adults, PG; **L.**

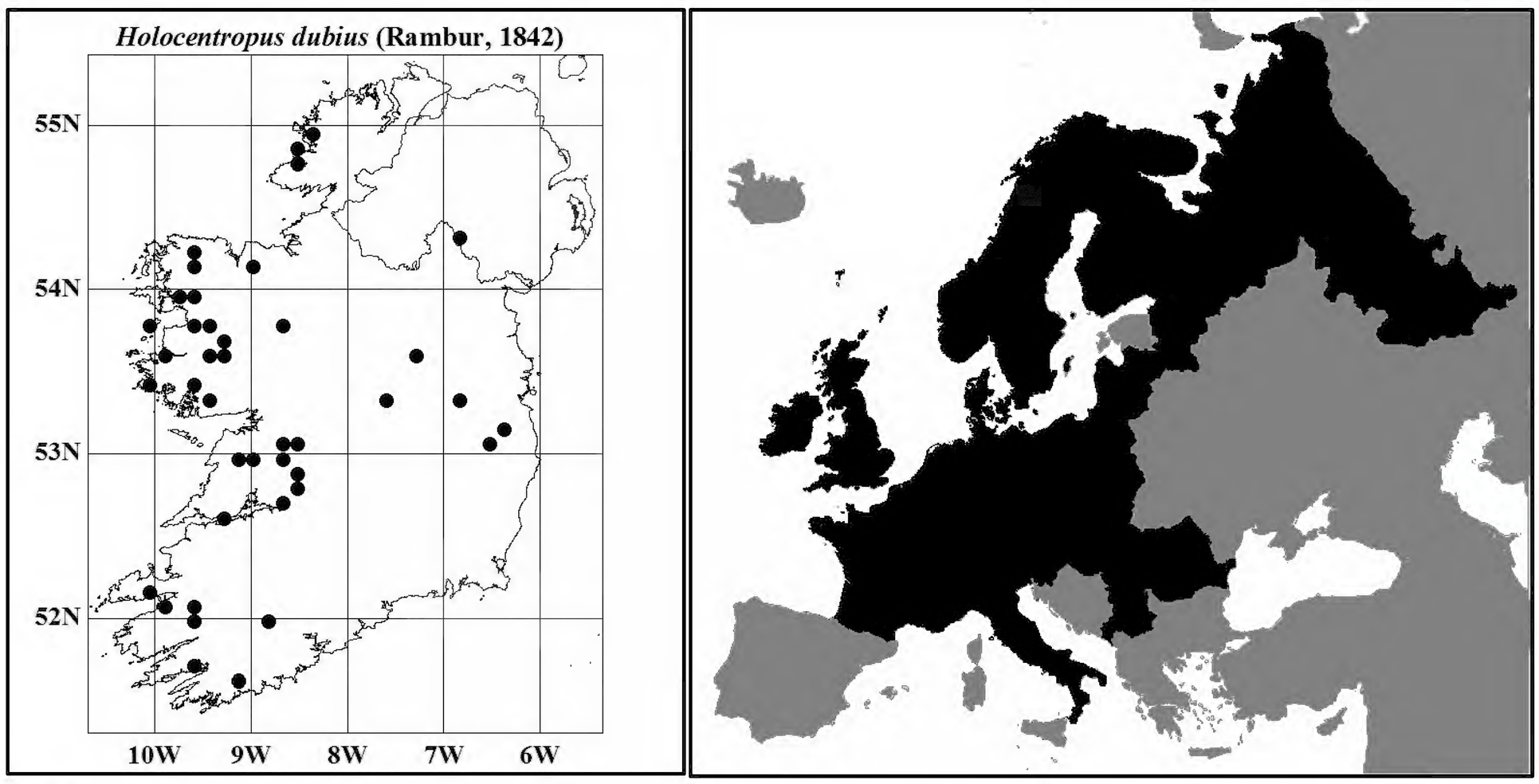
Sillan (H7106), light ♂ 11 August 1972, (H6906) 9♂♂ 30 August 1972, JPOC; **L. Tacker** (H6908), ♂ 1 September 1972, JPOC; **Moyduff Lake** (H6909), 5♂♂4♀♀ 10 August 1973, JPOC; **Muddy L.** (H7205), 5♂♂ 1 August 1973, JPOC; **R. Annalee** (H6806), above L. Sillan, ♂ 27 July 1972, JPOC; **R. Blackwater** (N6383), 2♂♂ 2 August 1973, JPOC; **R. Erne** (N4293), ♂ 5 August 1973, (H3712), Bakers Bridge, 3♂♂♀ 4 August 1973, JPOC; **R. Owenayle** (G9726), ♂ 3 August 1973, JPOC; **R. Swanlibar** (H1524), 6♂♂♀ 3 August 1973, JPOC. **CLARE**: **Doolough** (R1171), ♂ 9 July 1973, JPOC; **Lickeen L.** (R1891), ♂♂ 11 August 2003, JPOC; **L. Derg** (R6876), north of Killaloe, 9♂♂♀ 6 August 1986, CM/OSF (SINMNH), (R6979), ♂ 30 May 1974, ♂ 3 August 1976, LT 3♂♂3♀♀ 2-3 September 1973, JPOC; **L. Doon** (R5674), 11♂♂3♀♀ 12 July 1973, JPOC; **L. Graney** (R5691), ♀ 3 September 1973, JPOC, larvae 1996/1997, JW; **L. Inchiquin** (R2789), ♂ 4-6 June 1972, 3♂♂ 10 July 1973, JPOC; **L. Luogh** (R0693), ♂♂♀♀ 31 May 1984, JPOC; **Moyree R.** (R3689), ♂ 11 July 1973, JPOC; **O'Brien's Big Lake** (R4182), ♂ 11 July 1973, JPOC; **R. Bleach** (R5795), ♂ 13 July 1973, JPOC; **R. Caher** (M1608), Burren, 6♂♂ 19 July 1981, JPOC; **R. Gourna** (R5166), ♂ 12 July 1973, JPOC; **stream** (R0871), 2♂♂ 9 September 1973, JPOC. **CORK: Ballyhooly** (W7298) [R. Blackwater], ♀ 10 August 1938, BPB, conf. JPOC (BMNH); **R. Blackwater** (W5397), west of Mallow 2♀♀ 4 August 1986, CM/OSF (SINMNH). **DUBLIN: Dublin** [R. Dodder (O1328)], ♂ 9 June 1895 (misidentified as *H. picicornis*, det. JPOC) (NMI). **FERMANAGH: Upper L. Erne** (H2339), Bellanaleck, ♂ 27 August 2014, MAOC, det. JPOC (NMI). **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva in drift 26 May 1984 (pale head as in *Cyrnus* in L. Carra), PB, det. JPOC; **Hollygrove Lake** [Ballaghdacker L.] (M7857), 2♂♂ 8 August 2001, JPOC; **Inverin** (M0822), adults 17 July-2 August 1926, MEM, ♂ conf. JPOC (BMNH); **L. Ballyquirke** (M2331), larva 1996/1997, JW; **L. Corrib** (M1146), Upper, ♂♂ 8 August 1980, BC, conf. JPOC (NMI); **L. Lettercraffroe** (M0537), larva 1996/1997, JW; **L. Pollacappul** (L7458), Kylemore Abbey, 4♂♂ 25 July 1982, JPOC (NMI); **Ma'am** [Maam] **Cross** (L9746), 4♂♂, JJFXK, conf. JPOC (NMI); **Oughterard** (M1343), adults 3-9 August 1926, MEM (BMNH); **R. Shannon** (M8705), u/s of Portumna, grab 2 larvae 12 July 1973, AFF, det. JPOC; **Rosscahill Woods** (M1837), edge of Ross Lake, ♂ 11 July 2012, MG. **KERRY: Crinnagh R.** (V9481), 4♂♂♀ 4 August 1986, CM/OSF (SINMNH); **Kenmare** (V9070), ♂ 18 August 1902, JJFXK, conf. JPOC (NMI); **Killarney**, ♂ 24 June, ♂ 2 July, 2♂♂ 11 July, ♂ 21 July & ♂ 22b July 1887, JJFXK, conf. JPOC (NMI), Killarney, ♂♀ August [1887], [JJFXK] (NMS), adult 1940, BPB, det. JRH; **Killarney Lakes**, trout stomachs, 5 larvae, UCD, det. JPOC; **L. Caragh** (V7292), 2♂♂ 27 August 1973, JPOC; **L. Currane** (V5065), Waterville, 18 August 1965, JRH, (V5267), 6♂♂♀ 6 July & 5♂♂♀ 25 August 1973, JPOC; **L. Derriana** (V6073), 10♂♂2♀♀ 6 July 1973, JPOC; **L. Doon** [L. Slat] (Q6107), 17♂♂ 7 July 1973, JPOC; **L. Guitane** (W0385), 32♂♂7♀♀ 3 July 1973, JPOC; **L. Leane**, 3 larvae reed bed, 10 April 1973, (V9686), boat house, 14♂♂♀ 28 May 1974, (V9291), Golf Course,

3♂♂♀ 24 August 1973, (V9488), Ross Castle, ♂ 29 May 1974, JPOC; **L. Nakirka** (V7389), 5♂♂ 27 August 1973, JPOC; **Muckross Lake** (V9485), Colleen Bawn (Baun), 3♂♂ 28 July & 25♂♂2♀♀ 23 August 1973, 17♂♂2♀♀ 28 May 1974, (V9685), Dundag Bay, IET ♂♀ 21 June-14 July 1973, UCD, det. JPOC; **pond** (V9080), 38♂12♂♀♀ 4 July 1973, JPOC; **R. Blackwater** (V7969), 2♂♂ 26 August 1973, JPOC; **R. Caragh** (V7184), ♂ 3 July 1973, JPOC; **R. Gaddagh** (V8391), ♂ 24 August 1973, JPOC (NMI); **R. Galey** (R0438), ♂ 8 July 1973, JPOC; **R. Glenahoo** (Q5410), ♂ 7 July 1973, JPOC; **R. Maine** (Q8905), ♂ 7 July 1973, JPOC; **stream** (V9673), entering Roughty R., 3♂♂ 4 July 1973, JPOC; **Upper Lake, Killarney**, (V9383), Visitors Place, 3♂♂♀ 6 September 1972 (NMI), (V9181), larva exposed rocky shore and larva sheltered rocky shore, 13 April 1973, JPOC; **Waterville area** (V5065) [near L. Currane], adult July 1946, Hickey, det. JRH. **KILDARE: Donadea Forest Park** (N8332), lake, ♂ 6 June 1991, JPOC. **LEITRIM: L. Melvin** (G9249), 2♂♂ 7 August 1992, JPOC. **LIMERICK: R. Shannon** (R5456), below Limerick, larva 13 July 1972, AFF, det. JPOC. **MAYO: Achill** (F6405), ♂♀ 7 & ♂ 14 June 1909, det. KJM, conf. JPOC (NMI); **Clare Island** (L6985), adult, JNH, det. KJM (*in litt.*), MT ♂♂ 13 August 1999, SF, conf. JPOC (NMI); **L. Conn** (G1516), adult August 1964, MK, (G2306), Foxford, adult 30 August 1948, RS, det. JRH; **Sraheen L.** (F7100), Achill, ♂♀ June 1909, conf. JPOC (NMI); **Westport** (L9984), 4♂♂♀, JJFXK, conf. JPOC (NMI). **MEATH: R. Blackwater** (N8668), larvae 5 September 1988, DAG/JML, det. JML; **R. Boyne** (N8768), The Mollies, 2 larvae 9 September 1988, MFOG, det. JPOC; **R. Skane** (N8961), Ballinter, adult 22 August 1947, JRH. **MONAGHAN: Emyvale** (H6843), ♂♂ 20-30 July [1885-6], Morton Coll., conf. JPOC (NMS). **ROSCOMMON: L. Key** (G8207), 2 larvae 17 July 1972, (G8205), 6 larvae 18 July 1973, AFF, det. JPOC; **L. O'Flynn** (M5878), ♂ 10 August 2001, JPOC. **SLIGO: L. Gara South** (M6997), larva 1996/1997, JW; **L. na Léibe** [L. Labe] (G7212), August, MK. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 30a July & ♂ 11 August 1888, JJFXK, det. JPOC (NMI); **L. Derravaragh**, IETS 1973/1974: (N4169), Coolure Bay, 6 adults, (N4068), Raa Shore, 4 adults, near Derrya (N4168), 2 adults, PG; **L. Owel**, IETS 1973/1974: (N4056), Tullaghan shore, adult, (N4056), Srudoora Island, 4 adults, PG. **WEXFORD: Glenbough** (T0729), kettlehole near, ♂ 28 May 1987, JPOC; **Oaklands Wood** (S7125), artificial lake, 7♂♂♀ 4 July 2014, JPOC/MAOC, det. JPOC. **WICKLOW: Avoca R.** (T1982), 5♂♂ 21 July 1973, JPOC; **Avonmore R.** (T1593), 3♂♂ 21 July 1973, JPOC; **Dargle R.** (O2216), 3♂♂ 20 July 1973, JPOC; **Derriana R.** [R. Dereen] (S9987), ♂2♀♀ 23 July 1973, JPOC; **Glencullen R.** (O1919), ♂ 22 July 1973, JPOC; **Glendalough** (T1196), ♀ 31 July 1986, CM/OSF (SINMNH); **L. Dan**, 9 larvae exposed rocky shore, 2 larvae reed bed and 12 larvae sheltered rocky shore, 27 April 1973, JPOC, (O1502), ♂♀ July 1971, 72♂♂32♀♀ 1 August & 35♂♂9♀♀ 4 August 1972, 22♂♂21♀♀ 24 August 1973, all JPOC, larvae 1996/1997, JW, (O1504) 2♂♂ July 1971, 33♂♂14♀♀ 16 August 1972, 2♂♂ 21 July 1973, JPOC; **Lower Lake, Glendalough** (T1196), ♂ 21

July 1973, JPOC; **Lower L. Bray** (O1316), larvae 1996/1997, JW; **Polluphuca (Blessington) Reservoir** (O0108), ♂ 6 June & ♂ 22 July 1973, JPOC, larva 1996/1997, JW; **R. Bray** (O2518), ♂ 20 July 1973, JPOC; **R. Dodder** (O1529), Orwell Waterfall, ♂ 14 June 1973, JPOC; **R. Liffey** (O0216), Ballyward, near Brittas, adult 25 June 1948, JRH; **R. Potter** (T2985), ♂ 21 July 1973, JPOC; **Upper Lake Glendalough** (T1096), 5♂♂2♀♀ 21 July & 16♂♂4♀♀ 19 August 1973, JPOC; **Vartry Reservoir** (O2004), Roundwood, LT ♂ 12 July 1983, HAD, det. JPOC; **Vartry R.** (T2796), ♂♂ 20 July 1973, (O2208), 2♂♂ 4 August & 5♂♂ 24 August 1972, JPOC (NMI).

42. *Holocentropus dubius* (Rambur, 1842)

FIGURES 105-106. Known Irish and European distributions of *Holocentropus dubius*.



Holocentropus dubius is widely distributed in Ireland with the exception of the south/south-east. The larvae occur in bog and fen pools, lakes, ponds and slow flowing rivers where they spin nets attached to aquatic vegetation. These are coarse-meshed and tube shaped, acting as snares to catch swimming, drifting or walking live prey. The species is widespread in much of Europe.

Flight period: May–July (21 May–10 July).

Counties and 10km squares: Clare, Cork, Donegal, Galway, Kerry, Kildare, Limerick, Mayo, Monaghan, Offaly, Roscommon, Tipperary, Westmeath, Wicklow (14/32). The species is known from forty-one 10km squares (41/1019).

Published records

Morton, 1886 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* (**MAYO:** Cushinsheen (M0482) and Knappagh [Knappaghbeg] (M0080) Laoghs. **MONAGHAN:** Glaslough (H7241)). *King and Halbert, 1910* (**CORK:** Glandore (lakes near) (W2336). **KERRY:** L. Crincaum (V9382). **MAYO:** Cushinsheeaun (M0482) and Knappagh [Knappaghbeg] (M0080) Loughs. **MONAGHAN:** Glaslough

(H7241)). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Moriarty, 1972a* (**MAYO:** L. Carra (M1769); L. Mask (M1364)). *Moriarty, 1973a* (**CLARE:** L. Derg (R6070) = [R6978]. **MAYO:** L. Carra (M1070) = [M1770]). *Moriarty, 1974* (**CLARE:** L. Derg (R6978). **LIMERICK:** Parteen (R6768)). *O'Connor, 1977* (**CLARE:** L. Derrygeeha (R1556)). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V9290), (V9686); Muckross Lake; Upper Lake [Killarney] (V8981)). *O'Connor, 1987* (**CLARE**. **CORK**. **KERRY**. **MONAGHAN**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *White and Irvine, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 2 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1673)). *Crushell, 2008* (**OFFALY:** Clara Bog, Shanley's L. soak lake (N2330)). *Donohue et al., 2009* (**IRELAND**). *Hannigan, Mangan and Kelly-Quinn, 2011* (**WICKLOW:** Wicklow Mountains, Kippure/Liffey Head Bog (O1412)). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *Hannigan and Kelly-Quinn, 2012* (**MAYO:** Fiddandary Bog (G3820), pools; Knockmoyle Bog (F9723), pools; Owenirragh Bog (F9436), pools. **OFFALY:** Clara Bog (N2429), pools. **ROSCOMMON:** Carrowbehy Bog (M5782), pools [according to the calculated grid reference from the given co-ordinates, the site is in Co. Mayo and not Co. Roscommon as stated. However, the National Parks and Wildlife Service do place it in Roscommon but with different co-ordinates. These have been used to calculate the grid reference]. **WESTMEATH:** Scragh Bog (N4357), pools. **WICKLOW:** Kippure Bog (O1412), pools). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lake (R5188), 262m. **GALWAY:** upland lakes (M5403), 282m (M6701), 183m; lowland lakes (M0430), (M0329), (M0329), (M0229), (M0229), (M0929), (M0927)). *Little and Free, 2013* (**DONEGAL:** Dunglow L. (B7811); Kiltooris Lake (G6797); L. na Lughraman (G6588). **GALWAY:** Cloongat [Cloonagat] L. (L6847); Glenicmurren [Glenicmurrin] L. (M0031); L. Fee (L7961); L. Maumeen [the grid reference of L6141 appears to be in the sea and not included]; L. Ardderry (L9945). **MAYO:** L. Mask (M1060)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *Baars et al., 2014* (**IRELAND:** recorded in 7 of 12 upland peatland lakes). *Hannigan and Kelly-Quinn, 2014* (**IRELAND:** raised and blanket bog). *Anon., 2015a* (**WICKLOW:** Wicklow Mountains National Park (O0101)).

Unpublished records and voucher specimens

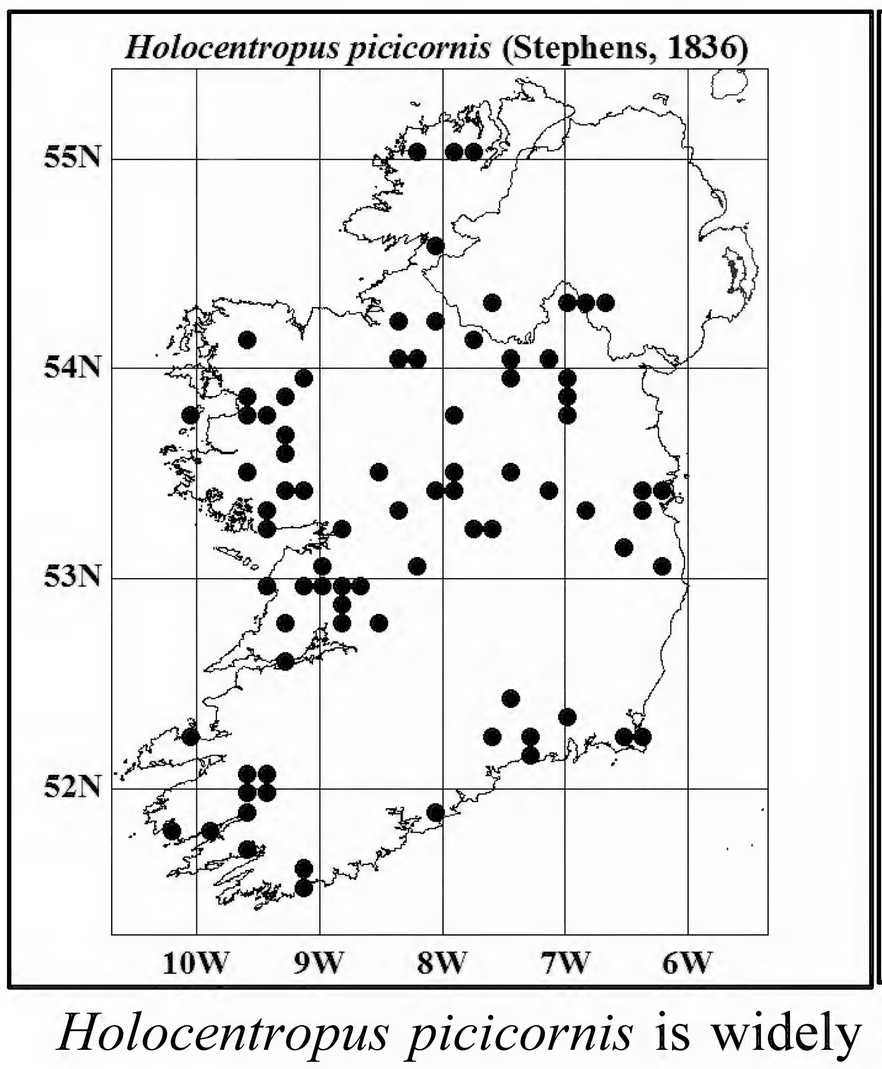
WEST IRELAND: ♂ 1886, JJFXK, det. RMCL, conf. JPOC (BMNH).

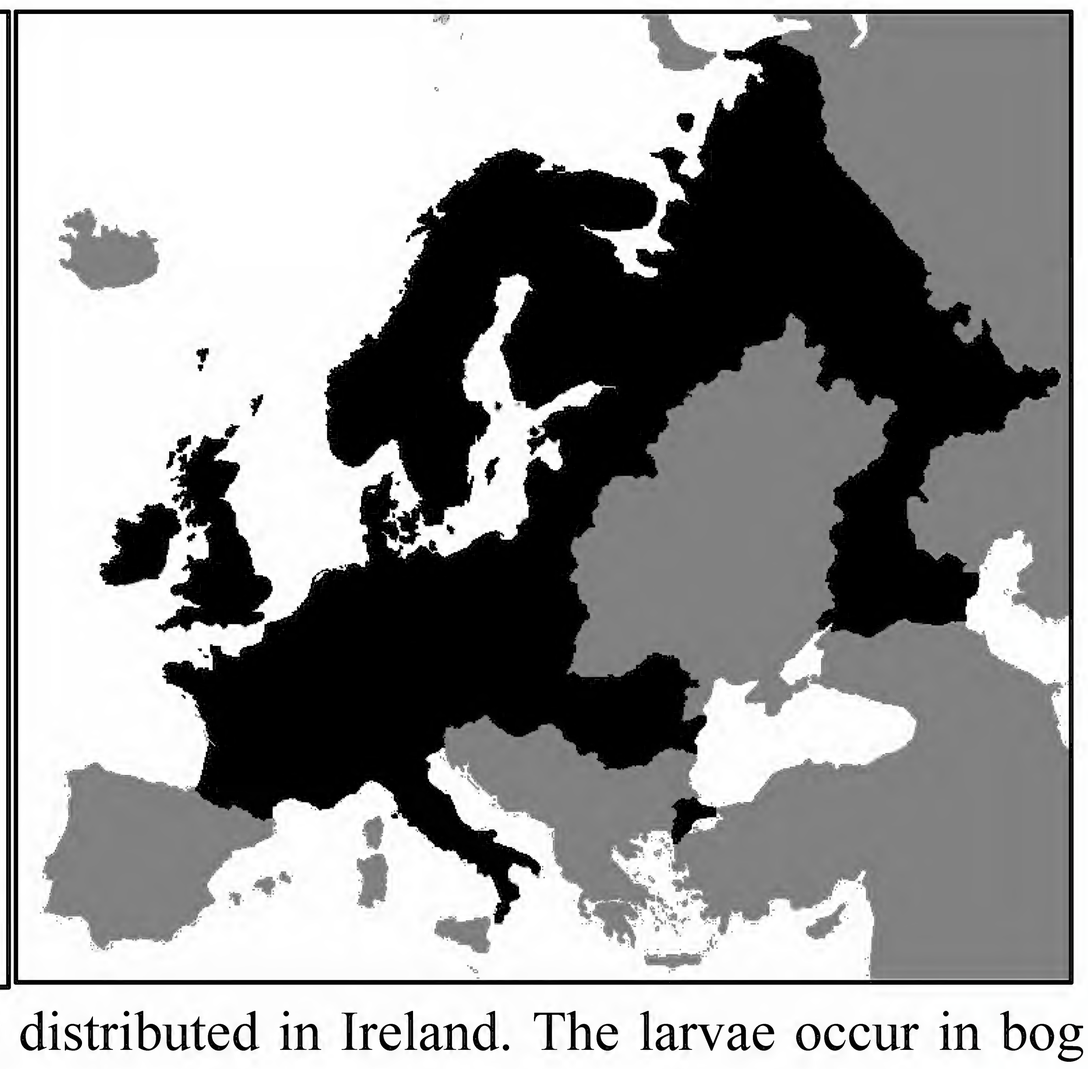
CLARE: Ballyeighter Wood (R3493), Ballyvaughan, at light, ♀ 23 June 1970, ECPC, conf. JPOC (NMS); **Cratloe Woods** (R5060), 7♂♂ 5 June 1992, JPOC; **L. Inchiquin** (R2789), larvae 1996/1997, JW. **CORK: Glengarriff** (V9256), adult July

1947, BPB, det. JRH. **KERRY: Killarney**, adult 10 July 1946, BPB, det. JRH; [**L.**] **Crincaum** (V9382), ♂ June 1900, [JNH] (NMI); **L. Cummernamuck** (V7489), 3♂♂♀ 5 July 1973, JPOC (NMI); **L. Doon** [L. Slat] (Q6107), ♂ 7 July 1973, JPOC (NMI); **L. Leane** (V9389), Inishfallen Island, ♂ 21 May 1973, (V9686), 3 larvae reed bed, 10 April 1973, JPOC, larvae September 1972, EJW (NMI); **Muckross Lake** (V9685), boat house, undated larva, ♂ 17 June 1973, (V9685), larva reed bed, 10 April 1973 and 2 larvae sheltered rocky shore 13 April 1973, (V9486), Camillan Bay, ♂ 20 June 1973, JPOC, (V9685), Dundag Bay, larva 5 January 1972, EJW (NMI); **Upper Lake, Killarney** (V9181), 2 larvae sheltered rocky shore, 13 April 1973, JPOC, (V8981), larva January 1972, EJW (NMI), (V8981), Stag Island Bay, larva 7 June 1972, EJW (NMI). **KILDARE: Donadea Forest Park** (N8332), lake, ♂ 6 June 1991, JPOC. **MAYO: Clare Island** (L6985), MT 2♂♂ 11 June 1998, SF, conf. JPOC (NMI); **Knappagh Loughs** [Knappaghbeg] (M0080), ♂ July 1886, JJFXK, conf. JPOC (BMNH); **Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT ♂ 30 May-20 June 1997, MCDS, det. JPOC (NMI); **Westport** (L9984), 4♂♂♀, JJFXK, conf. JPOC (NMI). **TIPPERARY: Kilmastulla R.** (R6867), larvae/adults 1976-1977, MAOC.

43. *Holocentropus picicornis* (Stephens, 1836)

FIGURES 107-108. Known Irish and European distributions of *Holocentropus picicornis*.





Holocentropus picicornis is widely distributed in Ireland. The larvae occur in bog pools, ponds, lakes, reservoirs and slow flowing areas in rivers in which they spin their nets. These are coarse-meshed and tube shaped. They act as snares to catch swimming, drifting or walking live prey. The typical adult form has dark brown wings with yellow mottling but Mosely (1930) reported a colour form (*aurata*), from a lake in the west of Ireland, in which the wings were unicolorous and of a golden yellow.

Another form from Parknaskilla had black wings with the pubescence of the anterior slightly rusty (which will probably intensify with age), the antennae without annulations (McLachlan, 1902). The species is widespread in much of Europe.
Flight period: May–September (28 May–7 September).
Counties and 10km squares: Armagh, Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Longford, Mayo, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Waterford, Westmeath, Wexford, Wicklow (21/32). The species is known from eighty-one 10km squares (81/1019).

Published records

Morton, 1883 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* (**GALWAY:** Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Gap of Dunloe (V8787); Glena (V9386) [beside L. Leane]; Horses' Glen (V9981); Kilbrean Laogh (W0093); Ross Castle (V9488); Torc Road (V9684). **MAYO:** Cushinsheen (M0482), Doogan (M0094), Knappabeg [Knappaghbeg] (M0080) and Prospect (L9581) Laoghs. **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WESTMEATH:** Coosan (N0446) [L. Ree]; Shannon (N0341)). *King, 1891* (**ARMAGH:** Armagh neighbourhood (H8745)). *Johnson, 1894* (**ARMAGH:** Mullinure (H8846), very dark variety). *McLachlan, 1902* (**KERRY:** Parknasilla (V7164) (black variety)). *King and Halbert, 1910* (**ARMAGH:** Lowry's L. (H9144), etc. **DONEGAL:** Loughs Askerry (C0919), Gorteen (C0818), Keel (C1524) and Mnafin (C0919). **DUBLIN:** R. Dodder near Dublin [O1328]; Santry demesne (O1640). **GALWAY:** Maumwee [Manwee] L. (L9748). **KERRY:** Gap of Dunloe (V8787); Glena (V9386) [beside L. Leane]; Horse's Glen (V9981); Kilbrean L. (W0093); near Kenmare (V9471); Parknasilla (V7164); Ross Castle (V9488); Torc (V9684). **MAYO:** Clare Island (L6985); Cushinsheeaun (M0482), Doogan (M0094), Knappabeg [Knappaghbeg] (M0080) and Prospect (L9581) Loughs. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WESTMEATH:** Coosan (N0446) [L. Ree]; Shannon (N0341)). *Halbert, 1912* (**MAYO:** Clare Island (L6985); Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822) (also colour form *auratus*)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara (also *auratus*)). *Mosely, 1930* (**GALWAY:** Inverin (M0822)). *Beirne, 1939* (**DUBLIN:** Dunsink (O0938) [R. Tolka]). *Bracken and Murray, 1973* (**CORK:** L. Aderry (W9373); L. Avaul (V9153). **KERRY:** L. Kilbrean (W0093)). *Moriarty, 1974* (**CLARE:** L. Fin (R4369)). *O'Connor, 1977* (**CLARE:** L. Derrygeeha (R1556)). *Speight, 1977* (**WESTMEATH:** Coosan Lake [Coosan (N0446)]). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7106), (H6906). **WICKLOW:** L. Dan (O1502)). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V9191); Muckross Lake; Upper Lake [Killarney] (V8981), (V9181)). *O'Connor, 1987* (**IRELAND:**

widespread). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *White and Irvine, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 1 out of 207 river sites). *Becerra Jurado et al., 2008* as *Helocentropus* (**WATERFORD:** Dunhill Village (the given grid reference of S0626 is wrong and has been corrected to S5002); Castle Farm (S5006); Milo's Farm (S5304)). *Donohue et al., 2009* (**IRELAND**). *Becerra Jurado et al., 2009* as *Helocentropus* (**WATERFORD:** ponds (S2510)). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *Atalah et al., 2010* (**IRELAND**). *Hannigan and Kelly-Quinn, 2012* (**MAYO:** Knockmoyle Bog (F9723), pools). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lakes (R5088), 273m, (R5188), 262m. **GALWAY:** lowland lakes (M0430), (M0329), (M0229), (M0929), (M0927), (M0927)). *Little and Free, 2013* (**CLARE:** Finn L. (R4370); L. Graney (R5690). **DONEGAL:** L. Golagh (G9666); Keel [Red Water] L. (B8416). **GALWAY:** L. Maumwee [Manwee] (L9748)). *O'Connor, 2013b* (**KERRY:** L. Currane (V5065); L. Leane (V9686)). *Hannigan and Kelly-Quinn, 2014* (**IRELAND:** blanket bog). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Mill L. (H2438)). *Anon., 2015a* (**KERRY:** Killarney National Park (V9490). **OFFALY:** Silver R. (N1319)).

Unpublished records and voucher specimens

WEST IRELAND: adult 1886, JJFXK, RMCL Coll. (BMNH).

ARMAGH: Armagh (H8745), 4♂♂ 28 May 1890, WFJ, conf. JPOC (NMI); **Lowry's L.** (H9144), ♂♀ 9 July 1891, WFJ, conf. JPOC (NMI). **CAVAN: Corrakane L.** (H4000), small lake, 22♂♂4♀♀ 16 June & LT 2♂♂ 4-5 August 1973, JPOC; **L. Aush** (small pond) (H6301), ♂ 2 August 1973, JPOC; **L. Brackley** (H1921), ♂ 4 August 1973, JPOC; **L. Coragh** (H6114), Cootehill, 14 July 1965, JRH; **L. Cuilcagh** (N6389), ♀ 10 August 1972, 2 larvae reed bed, 29 March 1973, JPOC; **L. Drummany** (H3712), ♀ 4 August 1973, JPOC; **L. Moneen** (G9828), 11♂♂♀ 3 August 1973, JPOC; **L. Mullagh** (N6785), 6♂♂2♀♀ 10 August & 9♂♂2♀♀ 31 August 1972, 3♂♂2♀♀ 1 August 1973, 6 larvae sheltered reed bed, 3 April 1973 (NMI), JPOC, larvae 1996/1997, JW; **L. Oughter** (H3308), ♀ 4 August 1972, JPOC; **L. Sheelin**, 10 August 1947, JRH; **pond (Drumad L.)** (H7102), 15♂♂6♀♀ 1 August 1973, JPOC; **Town Lake** (H6014), Cootehill, adult September 1960, adult 12 August 1965, JRH. **CLARE: Doolough** (R1171), ♂ 9 July 1973, JPOC; **L. Bunny** (R3796), 5♂♂ 28 May 1984, JPOC/MAOC, det. JPOC (NMI); **L. Derrygeeha** (R1556), ♂2♀♀ 8 July 1973, JPOC; **L. Inchiquin** (R2789), larva 1996/1997, JW; **L. Luogh** (R0693), ♂ 31 May 1984, JPOC (NMI); **L. Teereen** (R4671), LT 5♂♂♀ 11-12 July 1973, JPOC; **O'Brien's Big Lake** (R4182), 4♂♂ 11 July 1973, JPOC; **pond** (R3290), 2♂♂♀ 30 August 1973, JPOC; **R. Shannon** (R7072), Killaloe, 4♂♂ 6 August 1986, CM/OSF (SINMNH). **CORK: Ballin L.** (W1938), ♂♂ 12 August 1999, PA, det. JPOC; **L. Aderry** (W9373), adults June-September 1969, MK; **L. Avaul** (V9153), adults June-September 1969, MK; **Shepperton Lake** (W1835), near Skiberreen, ♂

(var. *aurata*) 19 August 1977, JMCH, det. JPOC (NMI). **DUBLIN: Dunsink** (O0938) [R. Tolka], adults 15 & 28 July 1938, BPB (BMNH); **Phoenix Park** (O1036), Quarry Lake, 9♂♂5♀♀ 31 May 1973, JPOC (NMI), 2♂♂♀ 31 July 1986, CM/OSF (SINMNH); **Santry** (O1640), adult, det. KJM, conf. JPOC (NMI). **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva 26 July 1984, PB, det. JPOC; **Inverin** (M0822), adults 17 July-2 August 1926, MEM, ♂ conf. JPOC (BMNH, NMS); **L. Acalla** [Callow L.] (M7234), adult, MK; **L. Corrib** (M1745), adults June-September 1964, MK, (M2341), Middle, ♂♀ 7 July 1980, BC, conf. JPOC (NMI), (M2741), Cloonmore, LT ♂3♀♀ 6 August 2014, MG/CC, det MG; **Mountbellew** (M6646), pleasure lake, north shore, ♂ 21 July 2012, MG; **Oughterard** (M1343), adult 3-9 August 1926, MEM (BMNH); **R. Shannon** (M8705), upstream of Portumna, grab larva 12 July 1973, AFF, det. JPOC. **KERRY: Kilbrean Lake** (W0093), 4♂♂2♀♀ 7 September 1972, JPOC, IET 7♂♂ 11-18 August 1969, IFT, det. JPOC (NMI); **Killarney**, ♂♀ August (NMS), adult 13a July 1887, [JJFXK] (BMNH); **L. Currane** (V5065), Waterville, adult 16 July 1964, adult 18 August 1965, JRH, (V5267), 2♂♂ 25 August 1973, JPOC; **L. Gill** (Q6114), ♀ 5 August 2004, JPOC; **L. Leane** (V9488), Ross Castle, 5♂♂ 29 May 1974, JPOC; **Muckross Lake** (V9685), reed bed, 6 larvae 10 April 1973, JPOC, (V9685), Dundag Bay, IETS ♂♀ 11 August (NMI), 13 August, ♂ 17 August & ♂ pupa, ♂6♀♀ 21 June-14 July 1973, UCD, det. JPOC; **pond** (V9080), 2♂♂ 4 July 1973, JPOC; **Upper Lake, Killarney** (V9181), larva sheltered rocky shore, 13 August 1973, JPOC, dredge larva August 1972, UCD, det. JPOC, dredge larvae August 1972, EJW (NMI), (V8981), Stag Island Bay, 3 larvae July 1972, EJW (NMI). **KILDARE: Donadea Forest Park** (N8332), lake, ♂♂ 14 June 1987, JPOC. **LONGFORD: R. Shannon** (N0684), north of L. Forbes, 7♂♂ 16 July 1978, JPOC. **MAYO: Castlebar** (M1188), adults June-September 1964, MK; **Clare Island** (L6985), larvae, peaty lakes, SF (det. IDW); **Creggan L.** (L6885) [Clare Island], ♂ 8 June 1909, JNH, det. KJM, conf. JPOC (NMI), MT ♂♀ 11 June 1998, SF, conf. JPOC (NMI); **L. Carra** (M1673), adults June-September 1964, MK; **L. Mask** (M1259, M1465), adults June-September 1964, MK, (M1472), Partry, adult 30 August 1948, E. Cooper, JRH; **Muchanagh R.** [Clydagh R. near Muckanagh] (G2300) on L. Cullen, Foxford, adult 30 August 1948, RS, det. JRH; **Westport** (L9984), 2♂♂♀♀, JJFXK, conf. JPOC (NMI). **MONAGHAN: Emyvale** (H6843), ♂♂ 20-30 July [1885-6], Morton Coll. (NMS); **Glaslough** (H7241), ♂♂♀ August 1892, Morton Coll. (NMS), 2♂♂♀ 12 August 1973, JPOC. **OFFALY: Pallas Lake** (N2719), adult, MK, adult 25 August 1958, JRH; **Yellow R.** (N5838), larvae June 1989, DAG/JML, det. JML. **ROSCOMMON: Cornacarta L.** (G8309), adults June-September 1964, MK. **SLIGO: Castledargan Lake** [L. Dargan] (G7228), adults June-September 1964, MK; **L. Arrow** (G7711), adults June-September 1964, MK. **TIPPERARY: R. Lingaun** (S4031), Slate Quarries, 9♂♂♀ 18 August 2000, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 25 July 1888, [JJFXK], det. RMCL, conf. JPOC (BMNH), ♂ 3 July, ♂ 8

July, ♀ 15 July, ♂ 24 July & ♂ 25 July, ♂ 1 August, 2♂♂ 13a August & ♀ 15 August 1888, JJFXK, conf. JPOC (NMI); **L. Ennell** (N4146), adults June-September 1964, MK. **WEXFORD: Lady's Island Lake** (T1007), ♂3♀♀ 28 August 1980, JPOC; **near Bridgetown** (S9810), ♂♂♀♀ 3 June & 3♂♂ 4 June 1987, JPOC; **small lake** (S7218), near J. F. Kennedy Park, ♂ 19 June 1990, JPOC. **WICKLOW: Poulaphouca Reservoir** (N9813), adult 17 August 1947, JRH.

[*Holocentropus stagnalis* (Albarda, 1874)

King (1889b) states that a ♀ *Holocentropus*, evidently of this species, was taken at Doogan Lough, [County Mayo]. There is a specimen under *Holocentropus stagnalis* in the Hunterian with green labels "Co. Mayo" and "260" but the abdomen is missing. King and Halbert (1910) also report the species from Lowry's Lough (H9144), *Johnson fide McLachlan*. However, there are no Johnson specimens in the McLachlan Collection in London. In addition, the Johnson *Holocentropus* in NMI from Lowry's Lough (H9144) all belong to *Holocentropus picicornis*.

Published records

King, 1888a (MAYO: Doogan Laogh (A female *Holocentropus*, evidently of this species, was taken at Doogan Laogh)). *King, 1889b* (MAYO: Doogan Laogh near Westport "Although it is unsafe as a rule to record a species of *Trichoptera* from a female, yet I believe I am correct in recording *Holocentropus stagnalis*"). *King and Halbert, 1910* (ARMAGH: Lowry's L. MAYO: Doogan L.). *Halbert, 1912* (MAYO: Westport). *Botosaneanu and Malicky, 1978* (IRELAND) [based on the erroneous literature record]. *Donohue et al., 2009* (unsafe larval identification). *O'Connor and Nelson, 2012* (listed as a misidentification). *Little and Free, 2013* (unsafe larval identification).]

44. *Neureclipsis bimaculata* (Linnaeus, 1758)

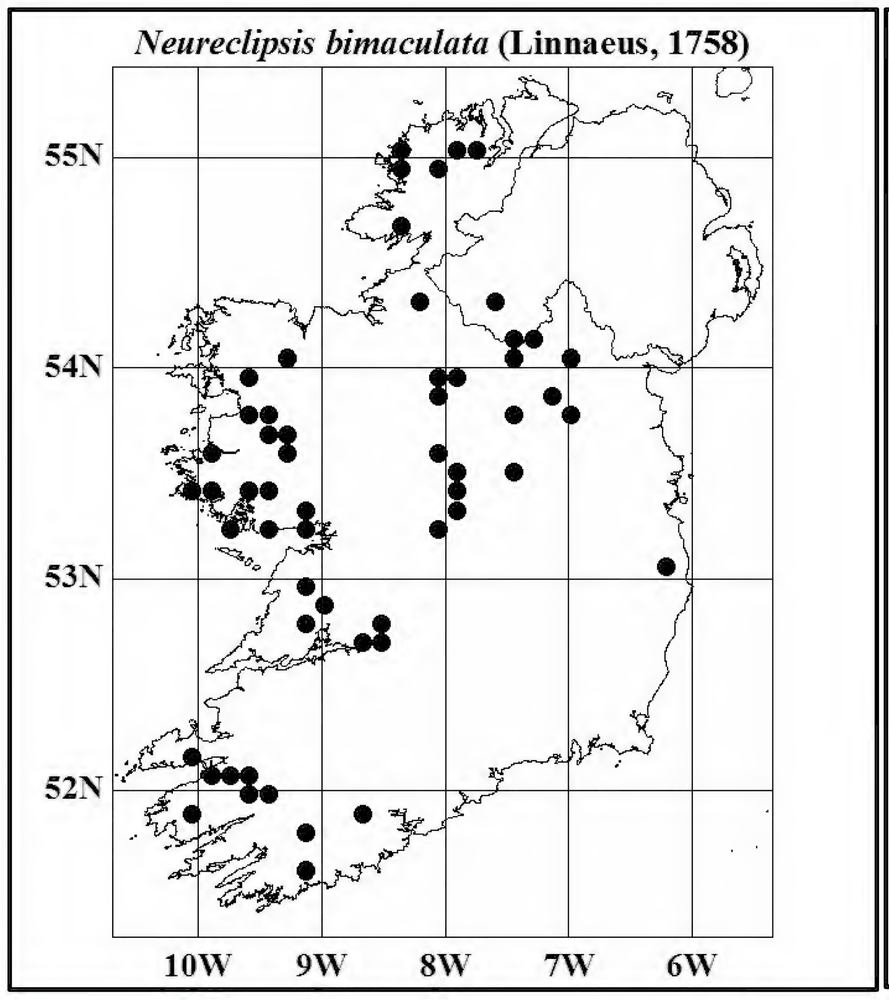
Neureclipsis bimaculata is widely distributed in Ireland. The Dublin record is not shown as it is unlocalised. The larvae construct large trumpet shaped nets with a narrow tail looping forward (Fig. 111) and are often found in rivers and streams exiting lakes and ponds. They also occur in lakes and slow flowing big rivers. The larvae and their nets can occur in huge numbers in suitable habitats and are particularly common on the River Shannon system. The food eaten by *N. bimaculata* is primarily of animal origin including zooplankton. However large amounts of algal material have been found in the guts of some Welsh larvae. The diet may change therefore with season and it is speculated by Edington and Hildrew (1995) that larvae become progressively more carnivorous as they grow. The species is widespread in Europe but unrecorded from the Iberian Peninsula.

Flight period: May–October (17 May–13 October).

Counties and 10km squares: Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Leitrim, Limerick, Longford, Mayo, Meath, Monaghan, Offaly,

Roscommon, Tipperary, Westmeath, Wicklow (19/32). The species is known from fifty-seven 10km squares (57/1019).

FIGURES 109-110. Known Irish and European distributions of *Neureclipsis bimaculata*.



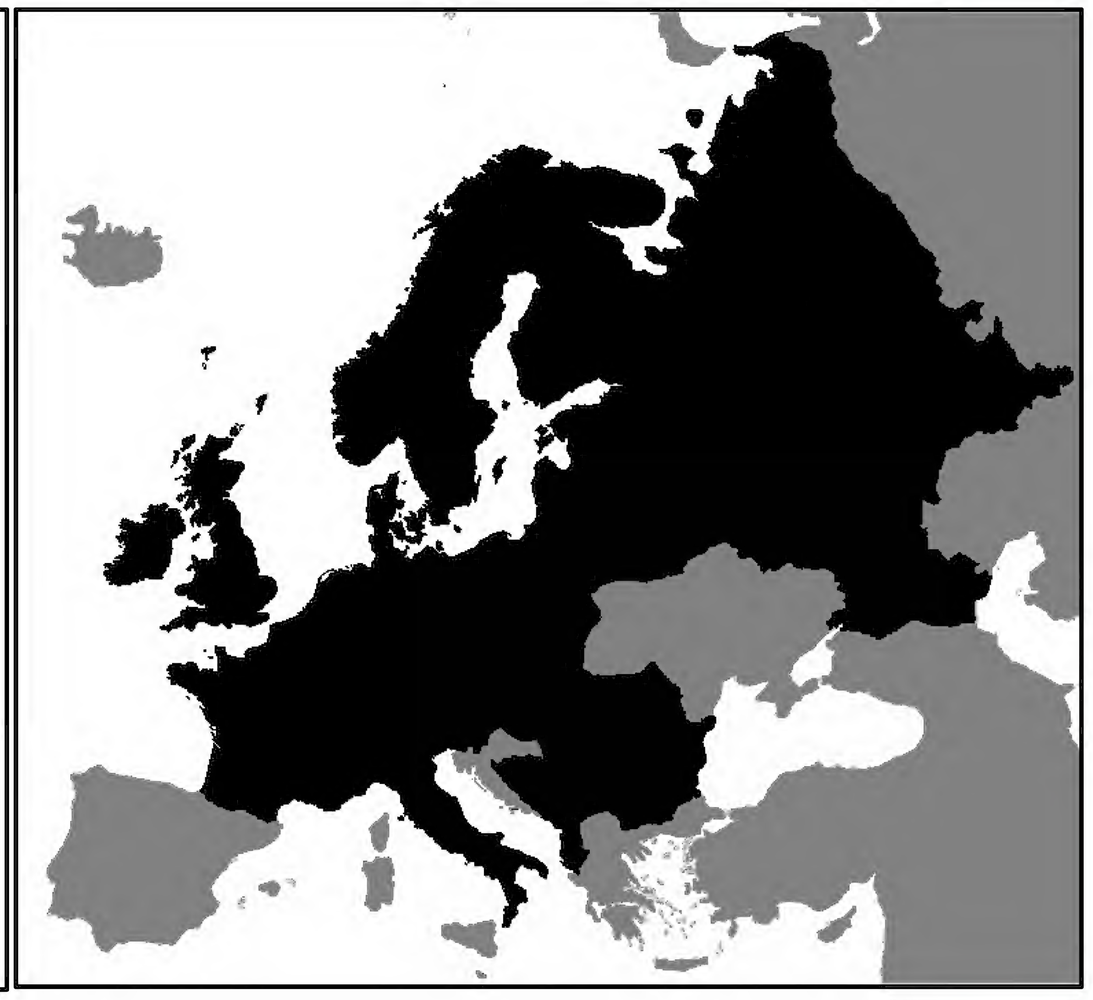
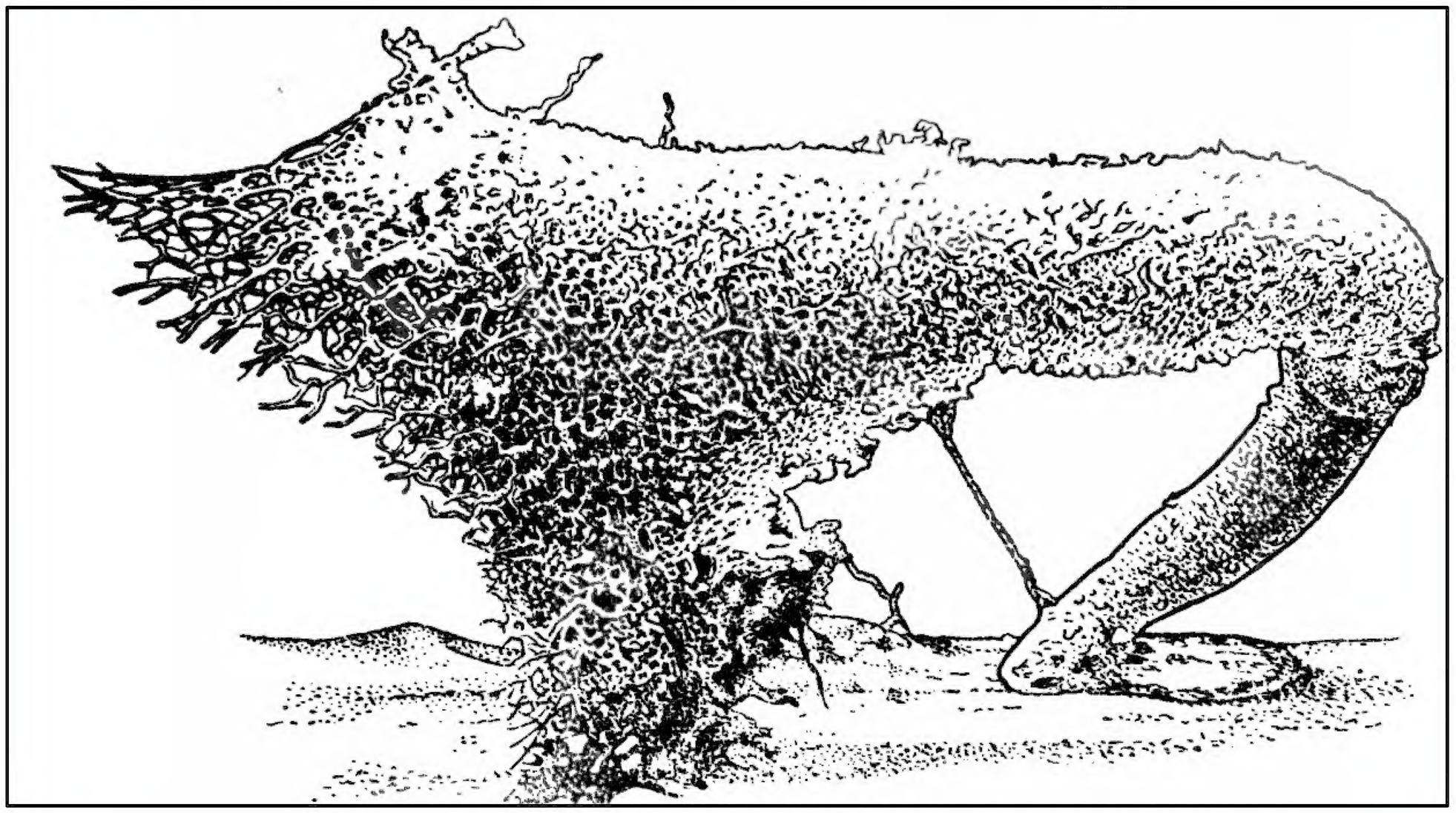


FIGURE 111. The larval net of *Neureclipsis bimaculata* (after Lepneva, 1964).



Published records

McLachlan, 1862 as *Polycentropus bimaculatus* (**DUBLIN:** near Dublin). *King, 1888a* (**DUBLIN:** Dublin. **GALWAY:** L. Corrib (Galway) (M2829). **KERRY:** Dinish (V9385); Gap of Dunloe (V8787); Horses' Glen (V9981). **MAYO:** Knappagh [Knappaghbeg] (M0080) and Mount Brown [Kinlooey] (M0381) Laoghs. **ROSCOMMON:** Shannon (near Athlone) (N0243). **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Twy [Breensford] Laogh (N1043)). *McLachlan, 1903* (**KERRY:**

Killarney). *King and Halbert, 1910* (**CORK:** near Glandore (lakes) (W2336). **DONEGAL:** Gorteen L. (C0818). **DUBLIN**. **GALWAY:** L. Corrib at Galway (M2829); Shannon near Athlone (M9724). **KERRY:** Dinish (V9385); Gap of Dunloe (V8787); Horse's Glen (V9981); Killarney. **MAYO:** Knappagh [Knappaghbeg] (M0080) and Mount Brown [Kinlooey] (M0381) Loughs. **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Twy L. (N1043)). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822). **MAYO:** L. Conn (G1516)). *Mosely, 1933* (**IRELAND:** occurs abundantly on the big Irish lakes). *Neboiss, 1963* (**CLARE:** L. Derg. **GALWAY:** Connemara [both J. Curtis records, 1835]). *Partridge and Foy, 1972* (**MAYO:** L. Feeagh (L9698)). *Fahy, 1972a* (**MAYO:** (F9505), (M0968) [near Toormakeady]). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Moriarty, 1972a* ([**GALWAY**]**:** L. Corrib, south (M2434)). *Moriarty, 1973a* (**CAVAN:** Belturbet Lakes (H3020) = [H3722]. **GALWAY:** South Corrib (M2030) = [M2434]). *Moriarty, 1973b* (**CAVAN:** R. Erne, Belturbet (H3516)). *Speight, 1977* (**WESTMEATH:** Coosan Lake [Coosan Point (N0446)]). *O'Connor, 1978b* (**KERRY:** R. Caragh (V7192)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7192)). *O'Connor and Wise, 1984* (**KERRY:** Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 2 out of 70 sampled sites). *White and Irvine, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Laune (V8991), the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 5 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1871)). *Donohue et al., 2009* (**IRELAND**). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**CLARE:** L. Acrow (R1968). **CORK:** L. Allua (W1865). **DONEGAL:** Dunglow L. (B7811); L. Anure (B8216); L. Barra (B9312); L. Key [the grid reference of G8460 appears to be incorrect and is not included]; Namanfin [lake top of Corker R. near Ardara] (G7983). **GALWAY:** Cloongat [Cloonagat] L. (L6847); L. Hibbert (L8822); L. Nahasleam [Aphreaghaun] (L9744). **LEITRIM:** Rowan L. (H0805). **WESTMEATH:** L. Ennell (N4146)). *O'Connor, 2013b* (**KERRY:** Muckross Lake (V9485)). *O'Connor and Davy-Bowker, 2014* (**FERMANAGH:** R. Finn (H4220); R. Sillees (H2341)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** R. Erne (H2637); Upper L. Erne (H2339)).

Unpublished records and voucher specimens

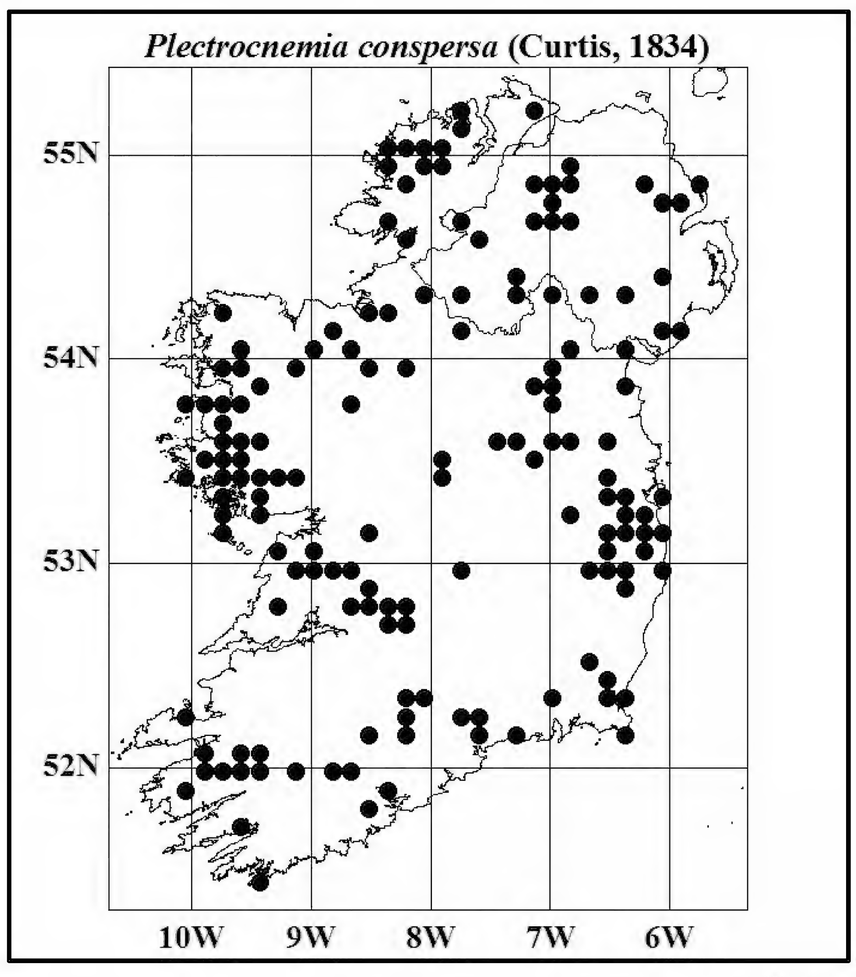
CAVAN: R. Blackwater (N6383), below L. Ramor, 9 larvae & 18♂♂18♀♀ 2 August & 7♂♂ 27 September 1973, JPOC, ♂ 1 August 1986, CM/OSF (SINMNH), above L. Ramor (N5992), 5 larvae & 8♂♂3♀♀ 2 August 1973, JPOC; **R. Erne**

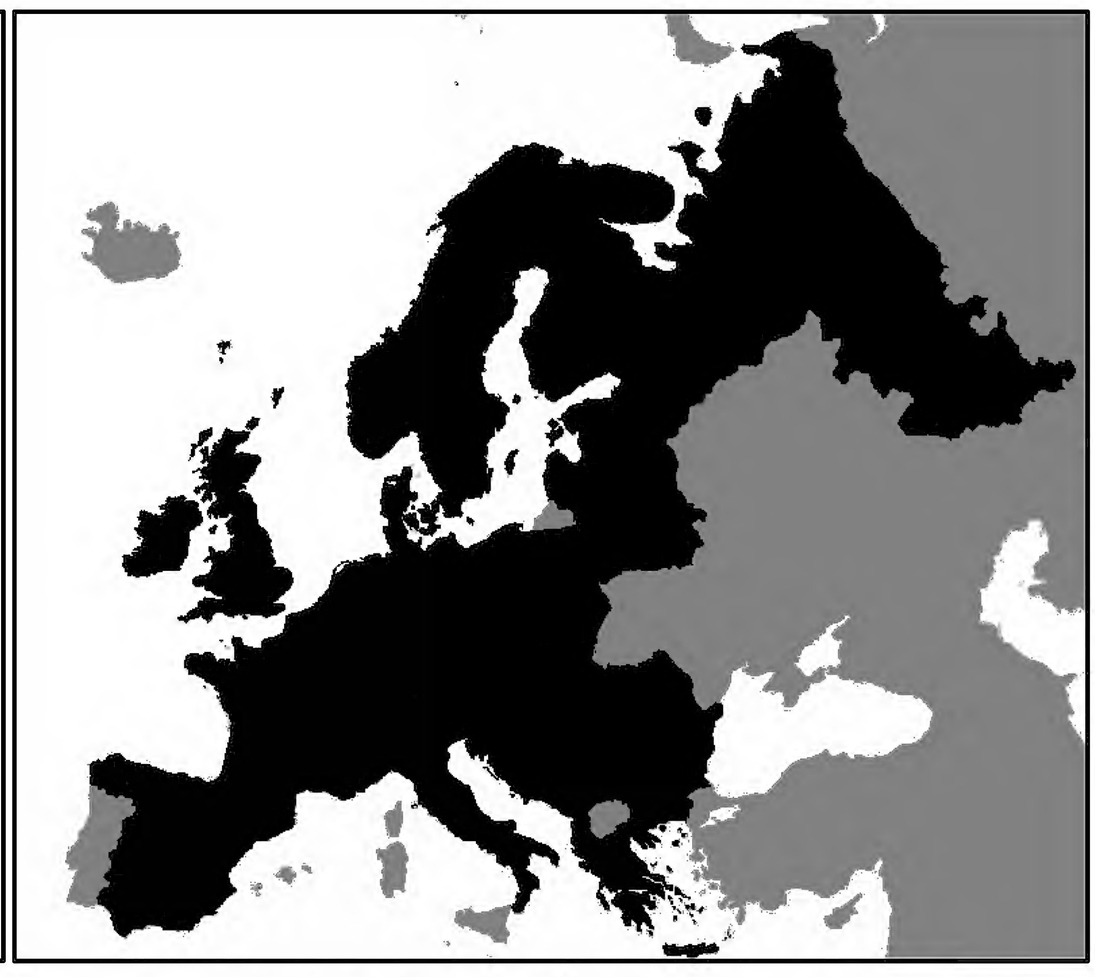
(H3712), Bakers Bridge, 8♂♂3♀♀ 4 August 1973, JPOC; **R. Inny** (N4081), below L. Sheelin, LT 6♂♂♀ 16-17 June 1973, JPOC, (N4081), at Finnea, adults May-June, MK, (N4081), 4♂♂ 17 June 1973, JPOC. **CLARE: L. Derg**, adult(s), in abundance on the steam boat, 29 & 31 July [1835], J. Curtis (NMV), (R7071), Killaloe, adult July 1948, C. Farran, det. JRH; **pond** (R6566), flowing into R. Shannon, ♂ 2 September 1973, JPOC; **R. Fergus**, adults May-June, MK, (R3480), near Ennis, 3 larvae & ♂ 11 July 1973, JPOC, (R2688), below L. Inchiquin, 2♂♂ 1 September 1973, JPOC; **R. Shannon** (R7072), Killaloe, 5♂♂ 6 August 1986, CM/OSF (SINMNH), (R6767), O'Brien's Bridge, 14♂♂♀ 3 September 1973, JPOC. **CORK: Glandore** (W2336), ♂, conf. JPOC (NMI); **R. Lee** (W5671), adults May-June, MK. **DONEGAL: Glenveagh National Park** (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT 80♂♂5♀♀ 10-30 July 1998, MCDS, det. JPOC; **Kilmacrenan** (C1420), adult 3 July 1891, JJFXK (TMM) (per IDW). **DUBLIN: Dublin**, ♂ 1861, CGB, det. RMCL, conf. JPOC (BMNH). **FERMANAGH: R. Erne** (H2637), Cloonatrig, Bellanaleck, 9♂♂2♀♀ 2 September 2015, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Ballinafad** (L7946), east side of An Abhainn Mhór ["Big river"], LT ♀ 3 October 2014, GM/CC, det. GM; **Connemara,** on the bridges going through, adult(s) [1835], J. Curtis (NMV); **Inverin** (M0822), adults 17 July-2 August 1926, MEM (BMNH); **Loch an Droichid outflow** (M0542), Derryerglinna, LT 17♂♂♀ 13 September 2014, MG/CC, det. MG; **L. Pollacappul** (L7458), 2♂♂ 25 July 1982, JPOC (NMI); **R. Corrib** (M2925), Nun's Island, ♂ 16 August, ♂ 29 August & ♂ 30 August 1978, DMG, det. JPOC (NMI); **R. Shannon** (M8603), downstream of Portumna, dredge 3 larvae 26 July 1972, JPOC, (M9816), larva 26 July 1972, AFF, det. JPOC. **KERRY: Killarney**, adult 12 June 1902, det. RMCL (BMNH), 2♂♂ 16 July & ♂ 22b July, ♂♂ 3 August, ♂♂ 5 August & 2♂♂ 11 August 1887, JJFXK, det. JPOC (NMI); **L. Doon** [L. Slat] (Q6107), near exiting stream, 14♂♂ 28 August 1973, JPOC; **L. Looscaunagh** (V8879), 5♂♂ 4 August 1986, CM/OSF (SINMNH), stream at, 7♂♂ 22 May 2001, JPOC; **Muckross Lake** (V9385), Dinish, 4♂♂ 22 May 2001, JPOC; **Upper Lake, Killarney** (V9383), Long Range, 4♂♂ 29 May 1974, JPOC; **R. Gaddagh** (V8391), ♂ 24 August 1973, JPOC (NMI); **R. Laune** (V8991), 6♂♂6♀♀ 5 September 1972, 11♂♂8♀♀ 24 August 1973, JPOC (NMI), (V8991), 2 larvae 15-16 July 1971, EJW (NMI), (V8892), 4 larvae June 1972, EJW (NMI); **R. Owgarriff** [R. Owengarriff] (V5871), Waterville, adult 1 September 1968, JRH. **LEITRIM: L. Boderg** (N0192), larva 19 July 1973, AFF, det. JPOC; **L. Corry** (M9497), 5 larvae 19 July 1972, AFF, det. JPOC; **L. Glenade** (G8345), Balloona bridge (R. Bonet outflow), 3♂♂2♀♀ 14 July 2012, MG; **R. Shannon** (M9399), dredge 54 larvae (different instars) 20 July 1973, AFF, det. JPOC. **LIMERICK: R. Shannon** (R5456), 7 larvae, dredge 19 July 1972, AFF, det. JPOC (NMI), St John's Castle (R5757), 2♂♂ 5 June 1992, JPOC, Castleconnell (R6562), ♂ 3 August 1988, JPOC (NMI), (R6663), Castleconnell, LT 321♂♂282♀♀ 12-13 July 1973, JPOC. **LONGFORD: L. Ree** (M9765), near Inchmacdermot Island, larva 21 July 1972, AFF, det. JPOC. **MAYO:**

L. Conn (G1516), adults 16-23 September 1929, MEM (BMNH); **L. Mask** (M1359), canal, adult 22 September 1948, JRH; **R. Aille** (M1574), larva 27 August 1980, LW, det. JPOC (NMI). **MEATH: R. Blackwater** (N6580), Crosswater, adults 26 July & 9 August 1964, JRH. **MONAGHAN: Knappagh Water** (H6910), Billy Fox Memorial Park, 2♂♂ 30 May 2013, JPOC. **OFFALY: Mongan Bog** (N0330), LT ♂ 24 August 1983, D. Higgins/KGMB, det. JPOC (NMI); **R. Shannon** (N0016), u/s of Bannagher, dredge 4 larvae 12 July 1972, AFF, det. JPOC. **ROSCOMMON: L. Ree**, adult 17 August 1958, PHW (BMNH); **R. Shannon** (M9796), u/s of Jamestown Canal, dredge 17 larvae 19 July 1972, AFF, det. JPOC. **TIPPERARY: Kilmastulla R.** (R6867), larvae/adults 1976-1977, MAOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], adult 15 August 1888, [JJFXK] (BMNH), ♂ 11 August 1888, JJFXK, det. JPOC (NMI), adults 20 August 1958, PHW (BMNH); **L. Ree** (N0245), Carby [Carberry] Island, adult 18 August 1958, PHW (BMNH), adults May 1947, 17 May 1948, C. Farran, det. JRH; **R. Shannon** (N0538), 7 larvae 13 July 1972, (N0440), 37 larvae 13 July 1972, AFF, det. JPOC. **WICKLOW: L. Dan** (O1502), where stream exits, ♂ 1 August 1972, LT 97♂♂91♀♀ 21-22 June 1973, JPOC; **Vartry Reservoir** (O1903), ♀ 24 August 1972, LT ♂3♀♀ 19-20 August 1973, JPOC.

45. *Plectrocnemia conspersa* (Curtis, 1834)

FIGURES 112-113. Known Irish and European distributions of *Plectrocnemia conspersa*.

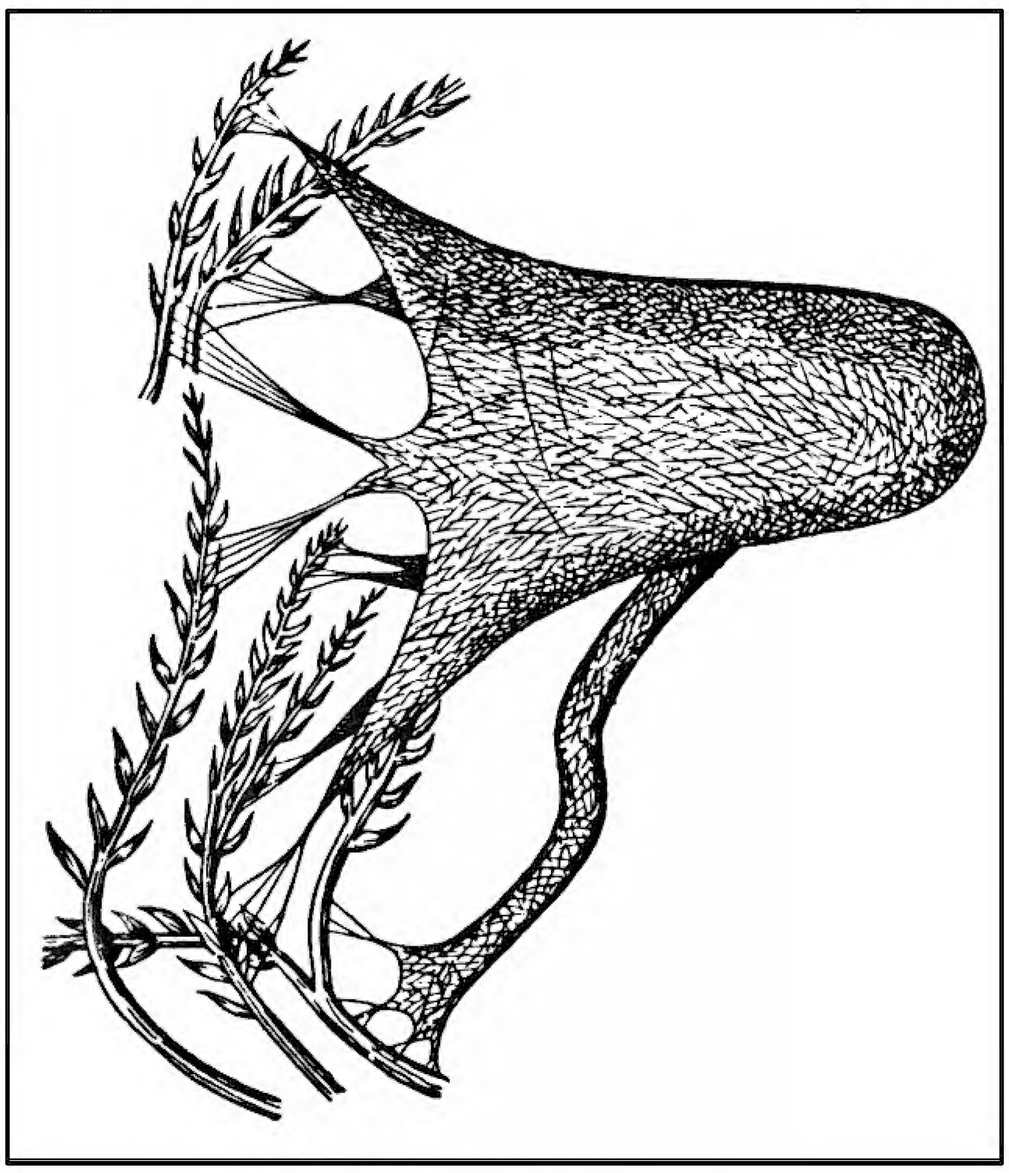




Plectrocnemia conspersa is widely distributed in Ireland. The larvae spin nets (Fig. 114), which are often conspicuous, in bog pools and hollows, drainage canals, marshes, rivers, streams, rocky shores in upland lakes and waterfalls. These are coarse-meshed and flat or tube shaped. They act as snares to catch swimming, drifting or walking live prey including those of terrestrial origin which fall into the water. In the Glenfinnish River, County Cork, five larval instars were identified. Since some larvae took more than one year to complete their life cycle, most of the five instars

were present for much of the year (Sangpradub, Giller and O'Connor, 1999). Wilcock, Hildrew and Nichols (2001) examined the history of *P. conspersa* in the British Isles using allozymes. Two Irish populations were included and the authors reported that only a subset of the alleles that were found in Britain were present in Ireland, with no unique alleles found in the latter. They also reported lower levels of genetic diversity present in Ireland and suggested that there was no evidence for survival in a distinct Irish refugium at the last glacial maximum. The species is widespread in Europe.
Flight period: May–December (5 May–20 December).
Counties and 10km squares: Antrim, Armagh, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Mayo, Meath, Monaghan, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (24/32). The species is known from 154 10km squares (154/1019).

FIGURE 114. The larval net of *Plectrocnemia conspersa* (after Lepneva, 1964).



Published records

McLachlan, 1874-1884 (**IRELAND**). *King, 1888a* (**MAYO:** Carrowbeg R. (M0084). **SLIGO:** L. Gill (G7534); also near Sligo (G7035). **WESTMEATH:** Ballykeeron [Ballykeeran] (N0744); Killucan (N5651); Shannon near Athlone (N0341); Waterston [Waterstown] Demesne (N1045)). *King, 1891* (**ARMAGH:** Armagh neighbourhood (H8745)). *King and Halbert, 1910* (**ARMAGH:** Armagh district (H8745); Poyntzpass (J0639) [R. Bann]. **DONEGAL:** Coolmore (G8566); Glenbeagh (B9918) [Owenbeagh R.]; L. Reelan (C1327). **KERRY:** Cloghereen (V9787); Devil's Punch-bowl (V9781). **MAYO:** Carrowbeg R. (M0084); Clare Island (L6985). **SLIGO:** L. Gill (G7534); near Sligo (G7035). **WESTMEATH:** Ballykeeran (N0744); Shannon near Athlone (N0341); Waterstown (N0946)). *Halbert, 1912* (**MAYO:** Clare Island

(L6985); Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822)). *Fahy, 1972a* (**MAYO:** (F9505). **WATERFORD:** (S1306). **WICKLOW:** (T1898)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Fahy, 1972c* (**MAYO:** Altahoney R. (F9605)). *Fahy, 1973* (**WICKLOW:** Glenmalur stream (T0396)). *Hazelton, 1974a, b* (**CLARE:** Poulnagollum (M1604), ♂, 800ft [244m] downstream from top end). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1819) [An * in this paper indicates adults taken and determined by JPOC]). *McCarthy, 1977* (**MEATH:** Trimblestown R. (N7262)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**WICKLOW:** L. Dan (O1502)). *O'Connor, and Bracken, 1980b* (**MEATH:** R. Tolka, north of Dunboyne (O0142), Clonee Bridge (O0341)). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480), (V7192)). *O'Connor and Wise, 1984* (**KERRY:** Upper Lake [Killarney]). *Reynolds, 1985a* (**KILDARE:** Mouds Bog (soak) (N7819)). *Reynolds, 1985b* (**GALWAY:** Aran Islands (L8210), Inishmore, Kilmurvey Stream). *O'Connor, 1987* (**IRELAND:** widespread). *Twomey and Giller, 1991* (**CORK:** tributary of R. Araglin (R8702)). *Giller and Twomey, 1993* (**CORK:** Glenfinnish R. (R8702)). *Tierney, Kelly-Quinn and Bracken, 1998* (**WICKLOW:** no sites given for the species). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Kelly-Quinn, 1998* (**DUBLIN**. **WICKLOW**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Wright et al., 2000* (**NORTHERN IRELAND:** 7 out of 70 sampled sites). *Wilcock, Hildrew and Nichols, 2001* (**DOWN:** Annalong R. (J3324). **TYRONE:** Owenkillew (H6487)). *White and Irvine, 2003* (**IRELAND**). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 76 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Donohue et al., 2009* (**IRELAND**). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *Ryder et al., 2011* (**MAYO:** Burrishoole (F9509); Owengarve (F9101)). *Anon., 2011* (**WEXFORD:** Ballyvoleen R. (S9625)). *Gammell, 2011* (**WEXFORD:** Artramon Stream, Edenvale (T0427); R. Sow, Edenvale (T0427)). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), pools, hollows. **WICKLOW:** Kippure Bog (O1412), pools). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lakes (R5088) 273m; (R5188) 262m. **CORK/KERRY:** upland lake (W1881) 429m. **GALWAY:** lowland lakes (M0329), (M0929), (M0927)). *Little and Free, 2013* (**CAVAN:** Skeagh L. Upper (H6500). **CLARE:** L. Naminna (R1871). **DONEGAL:** Dunglow L. (B7811), Gartan L. (C0515), Keel [Red Water] L. (B8416); Kindrum L. (C1843); L. Anure (B8216); L. Barra (B9312); L. Fad (C5339); L. Finn (B9101); L. Key [grid reference of G8460 seems incorrect and not included]; L. Veagh (Beagh) (C0121); Namanfin [lake top of

Corker R. near Ardara] (G7983). **GALWAY:** Cloongat [Cloonagat] L. (L6847); Derryclare (L8248); Kylemore L. (L7757); Loghanillaun (L8441); L. Anaserd (L6044); L. Ardderry (L9945); L. Bofin (M0344); L. Corrib (M2541); L. Hibbert (L8822); L. Maumwee [Manwee] (L9748); L. Maumeen [grid reference L1641 appears to be in the sea and has not been entered]; L. Nafooey (L9759); L. Rea (M6215); L. Shindilla (L9646); L. Skannive (L8032); Nahalseam [Aphreaghaun] L. (L9744); Nambrackkeagh [lake] (L8260). **MAYO:** Doo L. (L8368); Glencullin [Glenullin] L. (L8169); Islandeady L. (M0988); L. Cullin (G2303); L. Feeagh (F9600); L. Mask (M1060). **ROSCOMMON:** Errit L. (M5485); L. Drumharlow (G9001). **SLIGO**: Cloonacleigha L. (G6115); Easky L. (G4422); L. Gara (M7099); L. Talt (G3915). **WATERFORD:** Coumduala L. (S2914)). *O'Connor, 2013b* (**KERRY:** L. Derriana stream (V6274); R. Inny (V5572); Upper Lake (V9383)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Cashel Burn (D1706); Doagh R. (J2693); Doagh R. tributary (J2593); Glynn R. (J4099); Six Mile Water (J3195). **ARMAGH:** Kilnasaggart (R.) (J0615). **DERRY (LONDONDERRY):** R. Inver (C5301); R. Owenalena (C7406); R. Owenrigh (C6606). **DOWN:** Begny Hill Feeder (J2850); R. Shankys (J2225). **FERMANAGH:** Cooneen Water (H4539); R. Black (H0143); R. Boho (H1344); R. Lack (H2566). **TYRONE:** Dreenan Burn (H2184); Glashagh Burn (H6180); Gortin Water (H7879); Lissan Water (H8081); R. Cleen (H4748); R. Coolaghty (H2567); R. Owenkillew (H6885), (H6184)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *Feeley and Kelly-Quinn, 2014* (**WICKLOW:** Clohernagh Brook (O1090)). *Baars et al., 2014* (**IRELAND:** recorded in 12 of 12 upland peatland lakes). *Hannigan and Kelly-Quinn, 2014* (**IRELAND:** raised and blanket bog). *Carlsson et al., 2014* (**IRELAND**). *Anon., 2015a* (**CORK:** Glengarriff Nature Reserve (V9156). **DUBLIN:** Howth Head (O2637); Liffey Valley Park, Waterstown (O0835). **MAYO:** Ballycroy National Park (F8407). **WICKLOW:** Wicklow Mountains National Park (O0101), (T1196)).

Unpublished records and voucher specimens

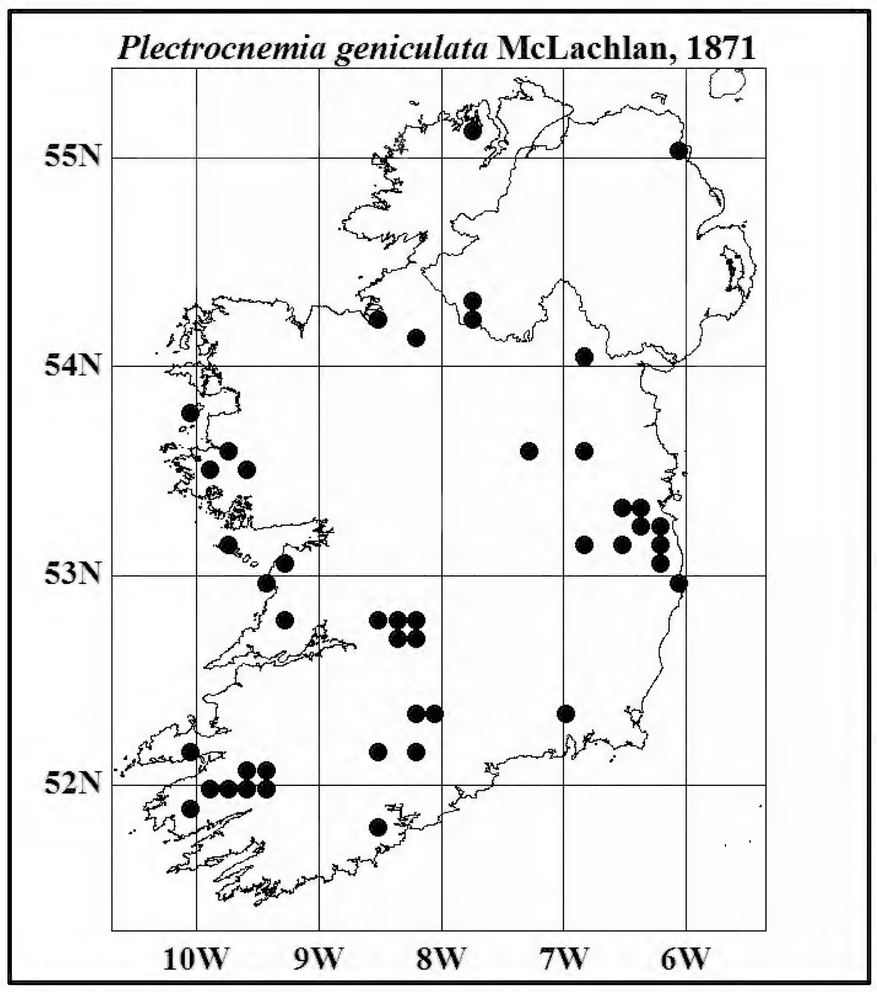
ARMAGH: Armagh (H8745), ♂ 27 June 1889, ♂ 4 August 1890, WFJ, conf. JPOC (NMI); **Poyntzpass** (J0639) [R. Bann], ♂ 12 July 1906, WFJ, conf. JPOC (NMI). **CAVAN: L. Mullagh** (N6785), larva 1996/1997, JW; **L. Ramor** (N6087), larva 1996/1997, JW; **R. Annalee** (H7206), ♂ 1 August 1973, JPOC; **R. Barora** (N6893), ♀ 4 October 1972, LT ♂ 1-2 August 1973, JPOC; **R. Swanlibar** (H1524), ♂ 3 August 1973, JPOC; **stream** (N6799), 2♂♂♀ 20 May 1974, JPOC; **stream/waterfall** (H1224), ♂ 3 August 1973, JPOC. **CLARE: Coolebeg** (M1602), Burren, stream, larva 23 May 1985, JPOC/MAOC, det. JPOC (NMI); **L. Bunny** (R3796), ♂ 28 May 1984, JPOC/MAOC, det. JPOC (NMI); **L. Cullaun** (R3290), larvae 1996/1997, JW;

L. Derg (R6979), LT 2♂♂ 2-3 September 1973, JPOC; **L. Graney** (R5691), larvae 1996/1997, JW; **L. Inchiquin** (R2789), larvae 1996/1997, JW; **stream** (R5267), near Oatfield, larva & ♀ 2 September 1973, JPOC. **CORK: Fota Wildlife Park** (W7871), ♂ 5 August 1986, KGMB, det. JPOC; **Glinny, Riverstick** (W6658), seasonal streams/ponds in alder woods, MT ♂5♀♀ 8-28 June 2005, MCDS, det. JPOC; **Rahan** (W6398), marshy area/small river, light 3♂♂3♀♀ June-September 1988, PS, det. JPOC; **R. Araglin Catchment** (R8702), larvae, NS & PSG; **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI); **Trabawn** (W0024), Sherkin Island, marsh, UVLT ♂ 16 June 1983, SB, det. JPOC. **DERRY: Formil** (C7611), Gelvin, LT ♂ 5 September 2014, KGMB, det. JPOC; **Smulgedon** (C7614), narrow upland stream through acid grassland/heathland, larval remains 2013, R. Fennelly, det. JPOC. **DONEGAL: Coolmore** (G8566), ♂ 9 November 1893, [WFJ], conf. JPOC (NMI), stream, ♂ 26 June 1981, JPOC (NMI); **Glenveagh National Park** (C0018), near Owenacoo R., MT ♂ 20-30 May 1998, MCDS, det. JPOC, (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT ♀ 10-30 July 1998, MCDS, det. JPOC. **DUBLIN: Glencullen R.** (O1919), larva 27 September 1977, JPOC; **Owendoher R** (O1324), larva 27 September 1977, JPOC; **Phoenix Park** (O1036), drainage canal, larva March 1986, JPOC; **R. Dodder**, station 12, stones, larvae 18 April 1950, S. O'Reilly, det. JPOC (NMI). **GALWAY: Aran Islands** (L8109), Dun Aengus well, Inis Mór [Inishmore], larvae 15 June 1982, JR, det. JPOC; **Connemara National Park** (L7157), RLT ♀ 18 August 1982, COK, det. JPOC, (L7455), Polladirk R., larvae 1991, SV, conf. JPOC; **Inverin** (M0822), adult 17 July-2 August 1926, MEM (BMNH); **L. Beg** (M2039), Pollagh Bog, LT 2♂♂ 30 August 2014, MG/CC, det. MG; **L. Lettercraffroe** (M0537), larva 1996/1997, JW; **L. Rea** (M6215), larva 1996/1997, JW. **KERRY: drain** (Q6311), Dingle Peninsula, ♂ 7 July 1973, JPOC; **O'Sullivan's Cascade** (V9188), larva 13 April 1973, JPOC; **R. Cloghereen** (V9787), near hotel, ♀ 28 May 1995, JPOC; **stream** (V9180), at Upper Lake, Killarney, ♀♀ 3 July 1973, JPOC (NMI); **stream** (V9182) at Tunnel, Upper Lake, Killarney, ♀♀ 3 July 1973, JPOC; **stream** (V6274), near Derriana L., LT ♂♂♀ 1-13 July 1979, JPOC (NMI); **stream** (V8879), leaving L. Lauscaunagh, ♀♀ 11 October 1972, JPOC; **stream** (V5873), ♂ 26 August 1973, JPOC. **KILDARE: Mouds Bog** (N7819), larva 9 June 1984, JPOC/MAOC, det. JPOC; **Rye Water** (O0036), Leixlip, adult 31 July 1947, JRH. **MAYO: Clare Island** (L6985), ♀ June 1909, det. KJM, conf. JPOC, ♂♂♀♀, SF, conf. JPOC (NMI), (L7185), ♀ 8 May 2003, KGMB, conf. JPOC (NMI); **Croagh Patrick** (L8981), Carrowmacloughlin, MVLT ♂ 3 August 1989, KGMB, det. JPOC; **Glenamoy Bog** (F9033), larva 25 April 1973, CD, det. JPOC. **MEATH: Ashbourne** (O0459), at light ♂ 6-7 November 1972, ♂ 19 October 1973, DAM, det. JPOC (NMI); **R. Boyne** (N7957), tributary, larva 16 December 1971, AFF, det. JPOC; **R. Tolka** (O0042), Dunboyne, ♂ 24-25 July 1981, TC, det. JPOC (NMI). **MONAGHAN: Emyvale** (H6843), ♀ 20-30 July [1885-6], Morton Coll. (NMS); **L. Egish** (H7714), larva 1996/1997, JW. **TIPPERARY: Kilmastulla R.** (R8072),

(R8071), (R7169), (R6867), larvae/adults 1976-1977, MAOC. **Monahinch Bog** (S1789), MVLT ♂ 18 June 1986, KGMB, det. JPOC (NMI). **TYRONE: Aghaboy** (H5581), LT ♀ 14 June 2014, KGMB, det. JPOC. **WATERFORD: Fennor** (S5201), at light, ♀ 12 July 1987, JPOC; **Mahon Falls** (S3108), stream near, 5 larvae, ♂ pupa & 4♂♂♀ 25 July 2015, JPOC/MAOC, det. JPOC (NMI); **near the Vee** (S3202), streams, larva 20 July 1987, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 31a July 1888, JJFXK, conf. JPOC (NMI); **Ballynafid** (N4060), in a wood beside small lake, ♂ 5 May 1987, JPOC; **L. Owel** (N4156), larva 1996/1997, JW. **WEXFORD: J. F. Kennedy Park** (S7219), streams, larva 7 July 2014, JPOC, larva & ♂ pupa 7 July 2014, MAOC/HOC, det. JPOC; **Killoughrim Forest** (S9041), stream, larva 3 July 2014, JPOC/MAOC, det. JPOC; **Nethertown** (T1104), 2♀♀ 6 June 1986, JPOC/MAOC, det. JPOC; **Oaklands Wood** (S7125), stream, larva 29 June 2014, JPOC/MAOC, det. JPOC; **The Raven** (T1024), larva 2 June 1994, JPOC. **WICKLOW: Annalecka Brook** (O0001), larva & ♂ 23 August 1973, JPOC (NMI); **Calary Lower** (O2311), ♀ 12 July 1983, JPOC; **Delgany R.** (O2610), larva 20 July 1973, JPOC; **Devil's Glen** (T2499), ♂ 7 August 1990, JPOC/MAOC, det. JPOC; **Glen of the Downs** (O2611), system of spring runnels, lots of beech/oak litter, larvae 11 March 1984, IDW; **Glencree R.** (O2014), larva 19 August 1973, JPOC; **Glencullen R.** (O1919), LT ♂2♀♀ 18-19 August 1973, JPOC; **Kilmacanogue** (O2513), marsh flowing by main stream, with litter of *Salix*, *Alnus* etc., marsh marigold, *Iris* etc. emergent, larva (iv), 11 March 1984, **King's R.** (O0401), LT ♂ 22-23 July 1973, JPOC; **Laragh** (T1496), adult 4 August 1961, FBA, det T. T. Macan (per IDW); IDW; **L. Dan** (O1502), ♂ 1 August 1972, stream near, larva 16 August 1972 (NMI), JPOC, larvae 1996/1997, JW, (O1601), stream entering exiting river, larva 16 August 1972, (O1504), 4♂♂3♀♀ 24 August 1973, LT ♂ 21-22 June 1973, exposed rocky shore, 6 larvae 27 April 1973, all JPOC; **Lower L. Bray** (O1316), LT ♂♀ 21-22 July 1973, JPOC, larvae 1996/1997, JW, (O1416), stream exiting, 7 larvae & 2♀♀ 22 July & 2♂♂ 18 August 1973, JPOC; **R. Liffey** (O0514), Ballysmuttan, adult 2 July 1946, JRH, (O0515), larva 22 July 1973, JPOC; **R. Ow** (T0981), ♀ 28 July 1973, JPOC; **Russelltown Park** (N9611), stream feeding lake, middle section parallel to road, larvae (v), 10 March 1984, IDW; **stream** (S8695), larva & ♂ 20 December 1973, JPOC; **stream** (O0714), entering R. Liffey ♂♀ 26 August 1973, JPOC; **stream/waterfall** (T1196), Glendalough, 6 larvae 21 July 1973, JPOC; **Three Mile Water** (T2989), LT ♂ 20-21 July 1973, JPOC; **Upper Lake, Glendalough** (T1096), 2 larvae ♂♀ 19 August 1973, JPOC; **Upper L. Bray** (O1315), 4♂♂ 18 August 1973, JPOC; **Vartry Reservoir** (O2004), Roundwood, LT ♂ 12 July 1983, HAD, det. JPOC; **Vartry R.** (O2108), larva 4 August 1972, JPOC; **waterfall/stream** (N9911), lake drive near Lacken, 2 larvae 26 August 1973, JPOC.

46. *Plectrocnemia geniculata* McLachlan, 1871

FIGURES 115-116. Known Irish and European distributions of *Plectrocnemia geniculata*.



A rarer species than *Plectrocnemia conspersa*, *P. geniculata* is nevertheless widely distributed in Ireland. The larvae spin nets mainly in bog pools and hollows, small streams and trickles but there are some river records particularly upland ones. The larvae have also been found alive underground in Irish cave systems after being washed in due to heavy rain. The nets are coarse-meshed and may be flat or tube shaped. They act as snares to catch swimming, drifting or walking live prey. The species has a more restricted European distribution than *P. conspersa*.

Flight period: April–August (26 April–30 August). Barnard and Ross (2012) give a British flight period of April–September.

Counties and 10km squares: Antrim, Armagh, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Mayo, Meath, Monaghan, Sligo, Tipperary, Westmeath, Wexford, Wicklow (18/32). The species is known from forty-five 10km squares (45/1019).

Published records

King, 1888a (**KERRY:** Horses' Glen (V9981)). *King and Halbert, 1910* (**ARMAGH. DONEGAL:** L. Reelan (C1327). **KERRY:** Horse's Glen (V9981)). *Kimmins, 1932* (**GALWAY:** Leenane [Leenaun] (L8762)). *Hazelton, 1974a, b* (**CLARE:** Poll-an-Ionian (M1203), larva 600ft [183m] down active streamway; St Catherine's 1 (Doolin Cave System) (R0796), larva in muddy pool in Flood Passage. **FERMANAGH:** Boho Cave (H1244), in small muddy pool in Flood Passage; Pollasumera Cave (H1233), larva 500ft [152m] underground in pool. **SLIGO:** Carrowmore Caverns (G8421), larva in series of pools). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1819), (O1919), (O2117), (O2217)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480)).

Reynolds, 1985b (**GALWAY:** Aran Islands (L8707), Inishmore, stream near Dúchathair). *O'Connor, 1987* (**IRELAND:** widespread). *Twomey and Giller, 1991* (**CORK:** tributary of R. Araglin (R8702)). *Giller and Twomey, 1993* (**CORK:** Glenfinnish R. (R8702)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 1 out of 70 sampled sites). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (V9890)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 17 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Donohue et al., 2009* (**IRELAND**). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), pools, hollows). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** L. Derriana stream (V6274)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Glenariff R. (D2221)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Feeley and Kelly-Quinn, 2014* (**IRELAND:** streams). *Baars et al., 2014* (**IRELAND:** recorded in 3 of 12 upland peatland lakes).

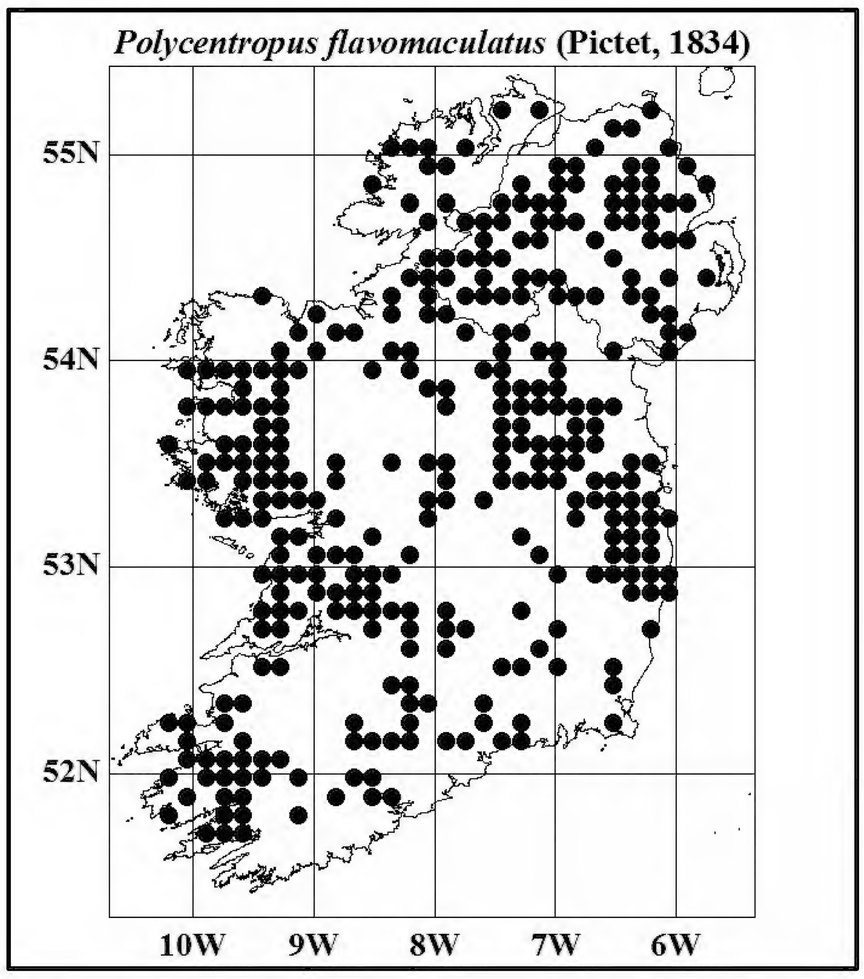
Unpublished records and voucher specimens

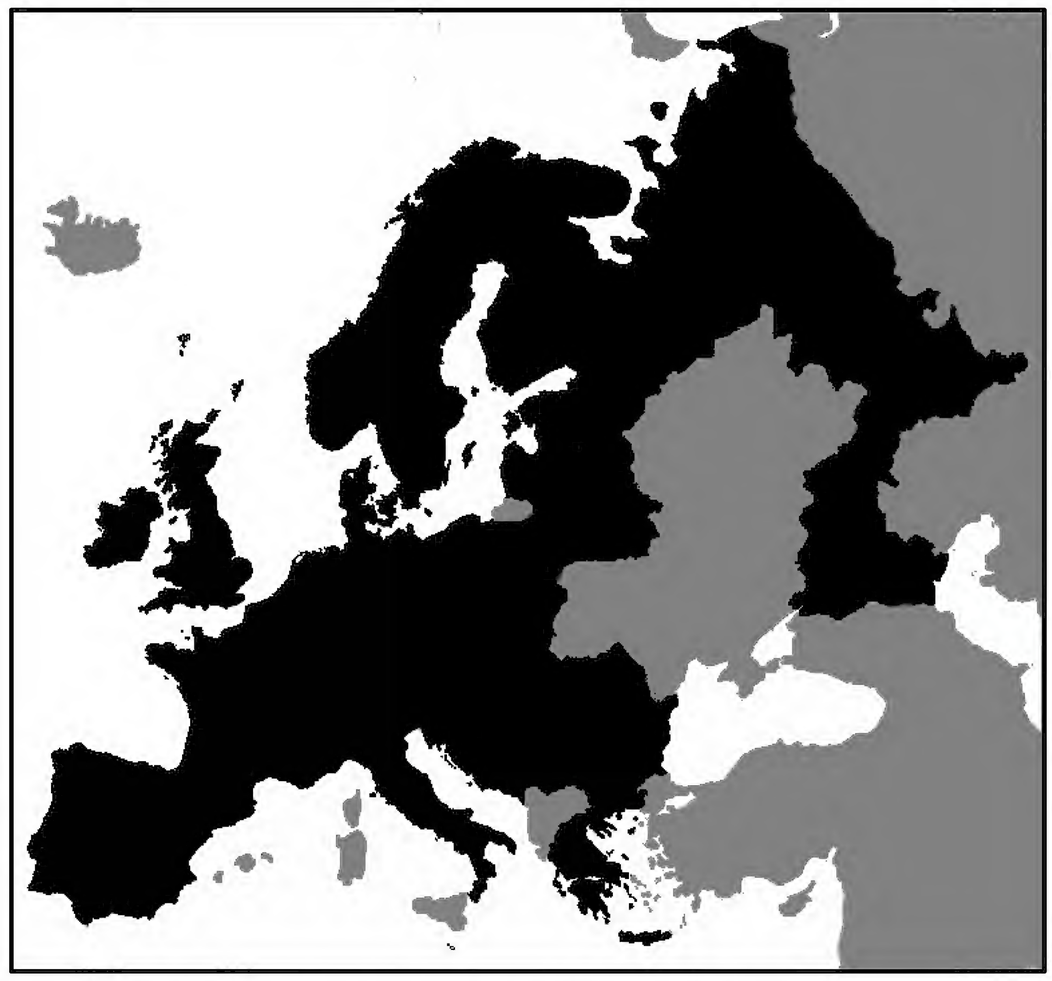
CLARE: Cooleabeg (M1602), Burren, stream, larva 23 May 1985, JPOC/MAOC, det. JPOC (NMI); **Doolough** (R1171), larva 1996/1997, JW. **CORK: Glinny, Riverstick** (W6658), seasonal streams/ponds in alder woods, MT 2♂♂ 8-28 June 2005, MCDS, det. JPOC; **Rahan** (W6398), marshy area near small river, light ♂ June-September 1988, PS, det. JPOC; **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.); **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI). **DUBLIN: Glencullen R.** (O1919), 5 larvae 27 September 1977, JPOC; **Owendoher R** (O1324), 4 larvae 27 September 1977, JPOC; **Strawberry Beds** (O0735), tufa stream, upper steep region above cottage larvae (v), 12 March 1984, IDW. **GALWAY: Connemara National Park** (L7455), Polladirk R., larvae 1991, SV, conf. JPOC, (L7157), acidophilous woodland, MTS ♂ 19 May-8 June 1994, ♀ 30 June-20 July 1994, MCDS, det. JPOC; **Inis Mór** [Inishmore] (L8607), Aran Islands, Ducathair [Black Fort], stream, larva 16 June 1982, JR, conf. JPOC; **Leenane** [Leenaun] (L8762), Connemara, adult 30 August 1930, MEM (BMNH); **L. Maumwee** [Manwee] (L9748), larvae 1996/1997, JW. **KERRY: Derriana L.** (V6274), Waterville, stream near, LT 3♂♂♀ 1-13 July 1979, JPOC (NMI); **Inch Strand** (Q6400), at light, adult 22 August 2003, GAC (per IDW); **Killarney**, adult August, Mosely Bequest (BMNH); **O'Sullivan's Cascade** (V9188), 4 larvae 13 April 1973, JPOC, larva October 1971, EJW; **stream** (V9385), at Dinish, 2 larvae & ♀ pupa 31 May 1995, JPOC; **Torc stream** (V9684), larva 13 April 1973, JPOC. **KILDARE: Louisa Bridge** (N9936), springs, larvae 22 August 1982, IDW; **Newbridge (Pollardstown) Fen** (N7715), MVLT near springs, canal drains and *Schoenus* fen, ♂ 22 July 1989, KGMB/JAG, det. JPOC, *Schoenus*/*Molinia* fen near drains, MVLT ♂ 26 April 1990, JAG, det. JPOC (NMI). **MAYO: Clare Island** (L6985), MT ♂♀, SF, conf. JPOC

(NMI). **MEATH: R. Boyne** (N7957), near Trim, 3 larvae 16 December 1971, AFF, det. JPOC. **MONAGHAN: L. Egish** (H7714), larva 1996/1997, JW. **SLIGO: Knocknarea Glen** (G6333), tufa stream, larva 4 March 1985, JPOC (NMI). **TIPPERARY: Kilmastulla R.** (R7269), (R6867), larvae/adults 1976-1977, MAOC. **WEXFORD: J. F. Kennedy Park** (S7218), streams, larva 14 July 1987, JPOC. **WICKLOW: Glencullen R.** (O1919), LT ♂♀ 18-19 August 1973, JPOC (NMI); **Knocksink Woods** (O2117), MT by flush beside woodland, ♂♀ 26-30 June 1995, CR, det. JPOC; **L. Dan** (O1502), larva 1996/1997, JW; **stream** (O1601), entering R. Annamore, larva 16 August 1972, JPOC; **stream/waterfall** (N9911), near Lacken, ♂ 22 July 1973, JPOC; **Vartry R.** (T2797), 2♂♂ 20 July 1973, JPOC (NMI).

47. *Polycentropus flavomaculatus* (Pictet, 1834)

FIGURES 117-118. Known Irish and European distributions of *Polycentropus flavomaculatus*.





Polycentropus flavomaculatus is one of the commonest Irish caddisflies and has been found in all counties. The predacious larvae spin shapeless nets, usually under stones, in lakes, ponds, rivers and streams. They have also been reported from blanket bog (Hannigan and Kelly-Quinn, 2014). The larvae are among the prey of the stoneflies *Dinocras cephalotes* and *Perla bipunctata* (Lucy, Costello and Giller, 1990). The species is widespread in Europe.

Flight period: April–September (19 April–30 September).

Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Laois, Leitrim, Limerick, Longford, Louth, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (32/32). The species is known from 325 10km squares (325/1019).

Published records

Morton, 1883 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *McLachlan, 1885* (**ANTRIM:** Colin Glen (J2771)). *King, 1888a* (**ANTRIM:** Colin Glen (J2771). **ARMAGH:** Armagh (H8745). **DUBLIN:** Lucan Demesne (O0235) [R. Liffey]; Tolka (Glasnevin) (O1437). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Coppagh Glen (W0382); Denough [Deenagh] (V9792) and Flesk (V9689) Rivers; Devil's Punch Bowl (V9781); Dinish (V9385); Gap of Dunloe (V8787); Ross Castle (V9488); Torc Cascade (V9684). **MAYO:** Broad (L9992) and Mount Brown [Kinlooey] (M0381) Laoghs; Carrowbeg (M0084) and Newport R. (L9994). **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Ballykeeron [Ballykeeran] (N0744); Coosan Point (N0446) [L. Ree]; Hare Island (N0446) [L. Ree]; Killinure (N0745) [L. Ree]; Shannon at Athlone (N0341); Twy Laogh (N1043); Waterston [Waterstown] Demesne (N1045)). *McLachlan, 1903* (**KERRY:** Killarney). *King and Halbert, 1910* (**ANTRIM:** Colin Glen (J2771). **ARMAGH:** L. Neagh (Coney Island) (H9364), etc. **DONEGAL:** Kilmacrennan district (C1420) [Leannan R.]; L. Fern (C1824) etc. **DUBLIN:** Lucan demesne (O0235) [R. Liffey]; R. Tolka at Glasnevin (O1437). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Maumwee [Manwee] Loughs (L9748), (L9738)). **KERRY:** Devil's Punch-bowl (V9781); Kenmare (V9471); Killarney and Muckross (V9786) districts; etc. **MAYO:** Achill Island (F6405); Broad (L9992) and Mount Brown [Kinlooey] (M0381) Loughs; Carrowbeg (M0084) and Newport (L9994) Rivers; Clare Island (L6985). **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WATERFORD:** Cappoquin (X0999). **WESTMEATH:** Ballykeeran (N0744); Coosan Point (N0446) [L. Ree]; Hare Island (N0446) [L. Ree]; Killinure (N0745); Shannon at Athlone (N0341); Twy L. (N1043); Waterston [Waterstown] (N1045). **WEXFORD:** Edenvale (T0427) [R. Sow]; Johnstown Castle (T0216) [small lakes]). *Halbert, 1912* (**MAYO:** Achill Island (F6405); Clare Island (L6985); Louisburgh (L8080); Newport (L9893); Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Galway (M2829); Inverin (M0822); Oughterard (M1343). **MAYO:** L. Conn (G1516)). *Kimmins, 1932* (**GALWAY:** Leenane [Leenaun] (L8762)). *Beirne, 1939* (**CORK:** Ballyhooly (W7298) [R. Blackwater]. **DUBLIN:** Dunsink (O0938) [R. Tolka]. **WEXFORD:** Courtown (T2057)). *Frost, 1939* (Straffan (N9229) [R. Liffey]; *Frost and Went, 1940* (**KILDARE:** Straffan (N9229)). *Frost, 1942* (**WICKLOW:** Ballysmuttan (O0514) [R. Liffey]). *Neboiss, 1963* (**KERRY:** Lake of Killarney, July [1835, J. Curtis]). *Toner and O'Connell, 1971* (**CORK:** Blarney (R. Martin) (W6176); Fermoy (R. Blackwater) (W8098); Mallow (R. Blackwater) (W5598); Mitchelstown (R. Funcheon) (R8113); Rathduff (R. Martin) (W5984)). **KERRY:** Rathmore (R. Blackwater) (W1693)). *McCarthy, 1972* (**DONEGAL:** Glen R. [Owenea R.]

(G8893)). *Partridge and Foy, 1972* (**MAYO:** L. Feeagh (F9600), (F9601), (F9602), (F9700), (F9701), (L9598), (L9698), (L9699), (L9798)). *Fahy, 1972a* (**ANTRIM:** (D0901) [corrected to Braid R. from D0902]. **DONEGAL:** (G9781). **DOWN:** (J1147) [near Banbridge] [corrected from J1247]. **FERMANAGH:** (H3439) [near Maguiresbridge]. **GALWAY:** (M3535), (M6914), (R6992). **KERRY:** (V9791) [Killarney]. **KILKENNY:** (S4843) [near Thomastown]; (S4144) [near Callan]; (S6055) [corrected from S6156]. **LIMERICK:** (R1040), (R8253). **LOUTH:** (N9882) [near Collon]. **MAYO:** (F9505), (G0837), (M0968) [near Toormakeady]. **MEATH:** (N8684) [near Siddan]. **OFFALY:** (N3029). **SLIGO:** (G5325). **TIPPERARY:** (R8114), (S2423). **WEXFORD:** (T1759) [corrected from T1859]. **WICKLOW:** (T1898), (T1899), (T2390)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Fahy, 1972c* (**MAYO:** Altahoney R. (F9605)). *Moriarty, 1972a* (**GALWAY:** L. Corrib (M1244). **MAYO:** L. Carra (M1769); L. Mask (M1364)). *Bracken and Murray, 1973* (**CORK:** L. Avaul (V9153)). *Moriarty, 1973a* (**CAVAN:** Belturbet Lakes (H3020) = [H3722]. **CLARE:** L. Derg (R6070) = [R6978]. **CORK:** R. Blackwater (W8799). **GALWAY:** L. Corrib (M1040) = [M1249], (M2030) = [M2434]. **MAYO:** L. Carra (M1070) = [M1770]; L. Conn (G1010) = [G1511]. **ROSCOMMON:** L. Key (G8000) = [G8304]. **SLIGO:** L. Gill (G7030) = [G7232]). *Moriarty, 1973b* (**CAVAN:** Erne lakes (H3722); R. Erne, Belturbet (H3516). **MAYO:** L. Conn (G1511). **SLIGO:** L. Gill (G7534)). *Moriarty, 1974* (**CLARE:** L. Derg (R6978); L. Fin (R4369). **ROSCOMMON:** L. Key (G8304). UNKNOWN COUNTIES: waters upstream of L. Derg). *Moriarty, 1975* (**CORK:** Island (Munster Blackwater R.) (W8799)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *McCarthy, 1977* (**MEATH:** Trimblestown R. (N7262)). *O'Connor and Norton, 1977* (**WESTMEATH:** Hare Island, L. Ree (N0446)). *Speight, 1977* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan Point (N0446)]); Hare Island (N0446)). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7007), (H6907), (H7106), (H6906). **WICKLOW:** L. Dan (O1504), (O1502)). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Bracken, 1980b* (**MEATH**: R. Tolka (O0341), Clonee Bridge). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7186)). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9191), (V9290), (V9490), (V9490), (V9788); Muckross Lake (V9385), (V9585), (V9685); Upper Lake [Killarney] (V8981)). *Murphy and Carter, 1984* (**ANTRIM:** L. Neagh (J1181), (J0485). **DERRY:** L. Neagh (H9485), (H9586)). *Dauod, Bolger and Bracken, 1986* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *O'Connor, 1987* (**IRELAND:** widespread). *Lucy, Costello and Giller, 1990* (**KERRY:** Cottoners R. (V8379)). *Bracken and Dauod, 1990* (**WICKLOW:** Roundwood Reservoir (O2002),

(O2004)). *Bracken, Norton and Phillips, 1991* (**TIPPERARY:** Kilmastulla R.). *O'Grady and King, 1992* (**MAYO:** Bunree R. (G3118)). *Carter and Murphy, 1993* (**IRELAND:** L. Neagh). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 59 out of 70 sampled sites). *Doherty and McCarthy, 2000* (**DONEGAL:** L. Eske (G9783). **MAYO:** L. Mask). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706) and near Murroogh (M1508)). *White and Irvine, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune, the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 150 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1673), (M1777)). *Donohue et al., 2009* (**IRELAND**). *Atalah et al., 2010* (**IRELAND**). *Knight and Penk, 2010* (**CORK:** Dripsey R. (W4873), interstitial gravels). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CORK/KERRY:** upland lakes (W1881), 426m, (W1881), 429m. **GALWAY:** upland lake (M5403), 282m, lowland lakes (M0430), (M0329), (M0329), (M0929), (M0927), (M0927)). *Little and Free, 2013* (**CAVAN:** Derrybrick [Garfiny] L. (H3412); Garty L. (N2797); L. Ramor (N6285); L. Sheelin (N4385); L. Sillan (H7106). **CLARE:** Doolough (R1172); L. Acrow (R1968); L. Bunny (R3796); L. Cullaun (R3190), (R3290); L. Graney (R5690); L. Naminna (R1871); Muckanagh L. (R3792). **CORK:** Glenbeg L. (V7053); L. Allua (W1865). **DONEGAL:** Gartan L. (C0515); Keel [Red Water] L. (B8416); Kiltooris Lake (G6797); L. Anure (B8216); L. Barra (B9312); L. Fad (C5339); L. Golagh (G9665); L. Key [grid reference of G8460 seems incorrect and not included]; L. Mourne (H0790); L. Nacung Upper (B8920); Naminn (C3941). **GALWAY:** Aughrusbeg L. (L5558); Ballynakill L. (L8622); Derryclare (L8248); Glendollagh [Garroman Lake] (L8447); Glenicmurren [Glenicmurrin] L. (M0031); Kylemore L. (L7755); L. Ardderry (L9945); L. Anaserd (L6044); L. Bofin (M0344); L. Corrib (M2541); L. Hibbert (L8822); L. Maumwee [Manwee] (L9748); L. Maumeen [the grid reference of L6141 appears to be in the sea and not included]; L. Nafooey (L9759); L. Nagravin (L9921); L. Rea (M6115), (M6215); L. Shindilla (L9646); Nambrackkeagh [lake] (L8260); Ross Lake (M1936). **KERRY:** Cloonaghlin L. (V6070); Cloonee L. (middle) (V8164); L. Barfinnihy (V8476); L. Currane (V5165); L. Inchiquin (V8363); L. Nakirka (V7389); L. Barfinnihy (V8476); Muckross Lake (V9584); Upper Lake, Killarney (V9282). **LEITRIM:** Glenade L. (G8246); Glencar L. (G7543); L. Boderg (N0291); L. Bofin (N0489); L. Rinn (N0994); L. Tap (N0194). **LONGFORD:** L. Forbes (N0882). **MAYO:** Beltra L. (M0798); Derryhick L. (M2099); L. Conn (G1810); L. Cullin (G2303); L. Feeagh (F9600); L. Mask (M1060). **ROSCOMMON:** L. Drumharlow (G9001). **SLIGO:** Easky L. (G4422); L. Gara (M7099); L. Gill (G7534); L. Skean (G8512); L. Talt (G3915). **WATERFORD:** Coumduala L. (S2914). **WICKLOW:** L. Dan (O1502)). *O'Connor, 2013b* (**KERRY:** Curraheen R.

(Q7811); Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Flesk (V9789); R. Inny (V5572); Upper Lake (V9383)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Cashel Burn (D1706); Crew Burn (J1370); Doagh R. (J2693); Doagh R. tributary (J2593); Dunnstown Burn (D0409); Glenariff R. (D2221); Glynn R., (J4099); Kellswater (J1698); Legnagooly Burn (D1312); R. Ballinderry (H7379); R. Braid (D1003); R. Bush (D0729), (C9436); R. Clady (Clady Water) (J1984), (C9603); R. Clogh (D0613); R. Crumlin (J1976); R. Dervock (D0233); R. Glenarm (D3114); R. Glenshesk (D1240); R. Main (J0889); Ross Burn (J1597); Six Mile Water (J3195), (J2890). **ARMAGH:** Forkhill R. (J0115); R. Agivey (C7912); R. Callan (H8539); R. Cusher (J0350). **DERRY (LONDONDERRY):** R. Aghadowey (C8722); R. Ballinderry (H9279), (H7379); R. Moyola (H9590); R. Owenbeg (C6809); R. Owenrigh (C6606); R. Roe (C7506). **DOWN:** Begny Hill Feeder (J2850); Cassy Water (J2314); R. Annacloy (J4448); R. Annalong (J3719); R. Kinnahalla (J2328); R. Shankys (J2225); Upper Bann (J1345), (J2129). **FERMANAGH:** Cooneen Water (H4539); Foxhill Burn (H2752); Lisnabane Burn (H3744); R. Arney (H1737); R. Ballinamallard (H2853); R. Bannagh (H1665); R. Black (H0143); R. Colebrooke (H3744); R. Finn (H4220); R. Glendurragh (H2265); R. Lack (H2566); R. Roogagh (Glen R.) (G9451); R. Sillees (H1152), (H2341); R. Termon (H1165). **TYRONE:** Ballygawley R. (Ballygawley Water) (H6353); Ballynahatty Water (R. Owenreagh) (H4367); Dreenan Burn (H2184); Dunnyboe Burn (H4599); Fairywater (H3976); Fury R. (H5551); Glashagh Burn (H6180); Gortin Water (H7879); Granagh Burn (H6072); Lissan Water (H8081); Oughtmame Burn (H6293); R. Ballinderry (H8376); R. Blackwater (H7544), (H6253); R. Camowen (H4673); R. Cleen (H4748); R. Cloghfin (H5767), (H5170); R. Coolaghty (H2567); R. Derg (H1980), (H3184); R. Glenelly (H5691); R. Owenkillew (H6885), (H4387), (H6184); R. Owenreagh (H3365), (H5882); R. Strule (H4186); Tullynadall Burn (H4490)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R8959), (R8758), (R8456); R. Mulkear (R8667), (R8467), (R8168); R. Tar (R9117), (R9416), (R9617)). *Hannigan and Kelly-Quinn, 2014* (**IRELAND:** blanket bog). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Woodford R. (H3419)). *Anon., 2015a* (**DUBLIN:** Liffey Valley Park, Waterstown (O0835). **KERRY:** Killarney National Park (V9590). **MAYO:** Ballycroy National Park (F8407). **ROSCOMMON:** L. Key Forest Park (G8404)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Lower L. Erne (H1758)).

Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), adults 1885, CGB (BMNH). **ARMAGH: Armagh** (H8745), ♂, WFJ, det. JPOC (NMI); **Coney Island** (H9364), L. Neagh, ♂ 22 July 1889, WFJ, conf. JPOC (NMI). **CARLOW: Bahana Woods** (S7239), ♂ 14 June 1991, JPOC/MAOC, det. JPOC; **R. Barrow** (S7238), St Mullins, ♂ 17 June 1991, JPOC/MAOC, det. JPOC, (S7237), St Mullins, LTS 2♂♂ 22 July 2015, JPOC/MAOC, det. JPOC, (S6861), 5 larvae 9 September 1971, AFF, det. JPOC.

CAVAN: Corrakane L. (H4000), small lake, LT ♂ 4-5 August 1973, JPOC; **L. Cuilcagh** (N6389), LT ♂ 26-27 September 1973, 5 larvae exposed rocky shore and 10 larvae sheltered rocky shore, 29 March 1973, JPOC; **L. Mullagh** (N6785), 5♂♂2♀♀ 10 August 1972, 2♂♂♀ 20 May 1974, 176 larvae exposed rocky shore, larva reed bed & 90 larvae sheltered rocky shore, 3 April 1973, JPOC; **L. Ramor** (N5987), ♂ 10 August 1972, 6♂♂ 16 May 2001, 4 larvae and 24♂♂7♀♀ 2 August 1973, JPOC, (N6087), larvae 1996/1997, JW; **L. Sheelin**, adult 1 June 1946, JRH, IET ♂ 10 September 1971, IFT, det. JPOC, (N4785), Mount Nugent, ♀ 1 August 1986, CM/OSF (SINMNH), (N4786), 4♂♂♀ 5 August 1973, (N4285), Kilnahard, ♂ 1 August 1986, (N4182), reed bed near Finnea, 2♂♂ 17 June 1973, JPOC, (N4183), Kelly's Bay, larva 10 September 1975, KFW, det. JPOC, IETS 1973/1974: (N4384), Kilnahard Bay, 9 adults, (N4183), Kelly's Bay, 5 adults, (N4685), Crover, 284 adults, (N4586), near Arley Point, 27 adults, (N4384), midlake opposite Kilnahard Bay, 23 adults, PG; **L. Sillan** (H7106), 2♂♂ 27 July 1971, lamp 13♂♂2♀♀ 27 July (NMI), 12♂♂13♀♀ 11 August, 2♂♂ 30 August & 2♂♂2♀♀ 31 August 1972, (H7106), LT ♂♂♀♀ 11 August 1972 (NMI), 8♂♂8♀♀ 9 & 2♂♂ 11 August 1972, (H6906), 8♂♂ 20 May 1974, lamp 3♂♂3♀♀ 30 August 1973, 45 larvae exposed rocky shore & 3 larvae sheltered rocky shore, 26 March 1973, JPOC; **Mount Nugent R.** [R. Inny] (N4986), 2♂♂♀ 5 August 1973, JPOC; **Moyduff Lake** (H6909), 7♂♂ 20 May 1973, JPOC; **R. Annalee** (H7205), below L. Sillan, ♂ 27 July 1972, larva, ♂ pupa & 52♂♂ 1 August 1973, 3♂♂♀ 20 May 1974, (H6906), 6♂♂3♀♀ 1 August & LT ♂ 31 July-1 August 1973, (H6709), ♂♀ 30 September 1972, (H6806), above L. Sillan, 11♂♂3♀♀ 27 July 1972, (H6810), 27♂♂♀ 1 September 1972, JPOC; **R. Barora** (N6893), ♂♂ 31 August & LT 5♂♂13♀♀ 1-2 August 1973, JPOC; **R. Blackwater** (N5992), above L. Ramor, 6 larvae 2 August 1973, (N6383), below L. Ramor, 3 larvae 2 August 1973, JPOC; **R. Erne** (N4293), 11♂♂ 16 June & 2 larvae, 9♂♂3♀♀ 5 August 1973, (H3712), 2♂♂ 4 August 1973, JPOC; **R. Laragh** (H5210), LT 3♂♂ 2-3 August 1973, JPOC; **R. Owenayle** (G9726), 11♂♂4♀♀ 3 August 1973, JPOC; **R. Owenmore** (H0626), larva 9♂♂ 3 August 1973, JPOC; **R. Swanlibar** (H1524), larva 28 September 1973, (H1524), 3 larvae & 3♂♂ 3 August 1973, JPOC; **stream** (N6193), larva & 2♂♂ 2 August 1973, JPOC; **stream** (N4096), 5♂♂ 16-17 June & 2♂♂♀ 5 August 1973, JPOC. **CLARE: Ballyvaughan** (M2207), adult, ECPC (NMS); Burren, ♂ 3-8 June 1951, JDB (misidentified as *P. kingi*) (BMNH); **Cloon R.** (R1759), ♂ 8 July 1973, JPOC; **Cullenagh R.** (R1388), LT 4♂♂ 9-10 July 1973, JPOC; **Doolough** (R1171), larva & 21♂♂2♀♀ 1 July 1973, JPOC; **Dromore Lake** (R3586), larva 1996/1997, JW; **Knockalough** (R1463), larva 8-9 July & 3♂♂ 29 August 1973, LT 5♂♂3♀♀ 8-9 July 1973, JPOC; **Lickeen Lake** (R1891), larva 10 July 1973, (R1691), 2♂♂ 31 August 1973, (R1690), 2♂♂ 11 August 2003, JPOC; **L. Cullaun** (R3290), larvae 1996/1997, JW; **L. Derg** (R6979), 3♂♂ 13 July 1973, 2♂♂ 30 May 1974, LT 144♂♂175♀♀ 2-3 September 1973, (R6878), ♂♂ 13 July 1973, (NMI), ♂♀ pupae 28 July 1972, AFF, det. JPOC, (R7186), Mount Shannon, adult 1 June 1947, JRH, LT ♂

26-27 August 2003, KGMB, det. JPOC; **L. Doo** (R1171), 10♂♂3♀♀ 29-30 August 1973, JPOC; **L. Doon** (R5674), 3♂♂ 12 July 1973, JPOC; **L. Graney** (R5691), 10♂♂ 3 September 1972, JPOC, larvae 1996/1997, JW; **L. Inchiquin** (R2789), 19♂♂11♀♀ 4-6 June 1972, ♂3♀♀ 10 July 1973, LT 2♂♂ 31 August-1 September 1973, JPOC, larvae 1996/1997, JW; **L. Luogh** (R0693), ♂ 31 May 1984, JPOC (NMI); **L. Moghna** (R1384), larva 9 July 1973, JPOC; **Moyree R.** (R3689), 2♂♂ 11 July 1973, larva 1 July 1973, JPOC; **Owengarney R.** (R4767), 2 larvae 2 September 1973, JPOC; **pond** (R3290), ♂ 30 August 1973, JPOC; **R. Annageeragh** (R0371), larvae 9 July 1973, JPOC; **R. Ardelooney** (R6770), 2♂♂ 30 May 1974, JPOC; **R. Bleach** (R5795), larva & 2♂♂ 13 July 1973, (R6096), LT 4♂♂2♀♀ 3-4 September 1973, JPOC; **R. Caher** (M1608), larva 19 July 1981, LT 5♂♂5♀♀ 30-31 August 1973, JPOC; **R. Creegh** (Q9966), 7♂♂ 29 August 1973, JPOC; **R. Cullenagh** (R1388), LT 5♂♂ 9-10 July 1973, JPOC; **R. Denlagh** (R1191), 2♂♂ 30 August 1973, JPOC; **R. Fergus** (R2689), exiting L. Inchiquin, 3♂♂ 1 August 1999, (R2688), below L. Inchiquin, 5♂♂3♀♀ 1 September 1973, (R2591), above L. Inchiquin, larva & 3♂♂2♀♀ 1 September 1973, (R3480), outside Ennis, 2 larvae & 2♂♂ 11 July 1973, (R3478), near Ennis, 7♂♂♀♂♂♀♀ 2 September 1973 (NMI), all JPOC; **R. Gournar** (R5166), 4 larvae, 15♂♂ pupae & 3♂♂ 12 July 1973, JPOC; **R. Mountrice** (R5866), larva 2 September 1973, JPOC; **R. Rinne** (R4174), 5 larvae & 9♂♂ 12 July 1973, JPOC; **R. Shannon** (R7072), Killaloe, ♂ 6 August 1986, CM/OSF (SINMNH), (R6767), O'Brien's Bridge, 4♂♂ 3 September 1973, JPOC; **stream** (R1472), larva 29 August 1973, JPOC; **stream** (R0871), ♂♀ 9 July 1973, JPOC; **stream** (R4182), entering O'Brien's Big Lake, larva 1 September 1973, JPOC; **stream** (V9673), entering Roughty R., 3 larvae 4 July 1973, JPOC; **stream** (R5376), larva 12 July 1973, JPOC; **Teereen L.** (R4671), LT 4♂♂ 11-12 July 1973, JPOC. **CORK: Ballyhooly** (W7298) [R. Blackwater], adults 12 August 1938, BPB (BMNH); **Blarney** (W6074), adult 20 June 1902, det. RMCL (BMNH); **Douglas R.** (W7169), MVT ♀ 25 August 1989, KGMB, det. JPOC; **Healy Pass** (V7855), Beare [Beara] Peninsula, ♂ 20 August 1981, HM, det. H. Malicky; **Kilcoman** [Bog] (R5811), MVLT 2♂♂ 12 June 1992, KGMB, det. JPOC; **L. Avaul** (V9153), adults June-September 1969, MK; **L. Coomeenaloughaun** (V8661), 2 larvae 10 May 1972, JPOC; **Rahan** (W6398), marshy area near small river, light ♂ June-September 1988, PS, det. JPOC; **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.); **R. Blackwater** (W5397), west of Mallow, ♀ 4 August 1986, CM/OSF (SINMNH). **DONEGAL: Glenveagh National Park** (C0018), near Owenacoo R., MT 4♂♂ 20-30 May 1998, MCDS, det. JPOC. **DUBLIN: Bohernabreena** (O0921), reared ♂ 19 April 1974, JPOC; **Dublin**, ♂ 9 June 1895 (misidentified as *H. picicornis*), det. JPOC (NMI); **Dunsink** (O0938) [R. Tolka], adult 28 July 1938, BPB (BMNH); **Glencullen R.** (O1919), 3 larvae 27 September 1977, JPOC; **Loughlinstown R.** (O2323), adult 8 August 1947, JRH; **R. Broadmeadow** (O1848), 6 larvae 13 July 1972, AFF, det. JPOC; **R. Dodder** (O1730), Clonskea [Clonskeagh], adult 10 September 1946, JRH, (O1529), Orwell Waterfall, ♂2♀♀ 14

August 1973, JPOC, (O0926), Old Bawn Bridge, larva 11 June 1971, AFF, det. JPOC; **R. Liffey** (O0735), Strawberry Beds, among debris of emergent vegetation, larvae (v), 12 March 1984, IDW, 2♀♀ 29 August 2015, JPOC, (O0235), Lucan Demesne, 4♂♂ 18 September 1973, JPOC; **R. Tolka** (O1037), Ashtown Bridge, ♂♀ 7 June 1972, ♂ 6 June 1973, (O0640), Mulhuddart, LT 2♂♂ 10-11 June 1973, JPOC. **FERMANAGH: Lower L. Erne** (H1658), adult 27 May 1948, Beatty, det. JRH; **Woodford R.** (H3419), Aghale, 4♂♂ 14 May 2015, JPOC/MAOC, det. JPOC. **GALWAY: Cashel Bay** (L7942), adult 6-16 September 1929, MEM (BMNH); **Cong** (M1455), path to disused corn mill, ♂ 9 May 2015, MG/CC, det. MG; **Connemara National Park** (L7455), Polladirk R., larvae 1991, SV, conf. JPOC; **Coole L.** (M4204), ♂ 25 June 1977, KP, det. JPOC; **Doo L.** (M4203), 3♂♂ 25 June 1977, KP, det. JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 12 March 1984, PB, det. JPOC; **Galway** (M2927), adult 17 July 1926, MEM (BMNH); **Garryland Wood** (M4103), 3 larvae & 4♂♂ 25 June 1977, KP, det. JPOC; **Inver** (L9139), 24 September 1946, JRH; **Inverin** (M0822), adult 17 July-2 August 1926, MEM (BMNH); **Killian R.** (M7449), Carrowmore, road bridge u/s confluence with Shiven R., larva 12 May 2012, MG; **Loch an Droichid outflow** (M0542), Derryerglinna, LT ♂ 13 September 2014, MG/CC, det. MG; **L. Ballyquirke** (M2331), larva 1996/1997, JW; **L. Corrib** (M1745), adults June-September 1964, MK, (M2531), Hurney's Point [near Moycullen], MVLT ♂ 12 August 2003, KGMB, det. JPOC, (M2642), Keekill, ♂ 2 August 2003, KGMB, det. JPOC, (M1146), Upper, ♂♀ 7 June 1980, BC, conf. JPOC (NMI), (M2930), Angliham, larva 12 July 1982, DOK, conf. JPOC, (M2741), Cloonmore, LT ♂ 6 August 2014, MG/CC, det MG, (M2341), Knockferry, LT 5♂♂6♀♀ 21 August 2014, MG/CC, det. MG, (M0949), Curraghduff West, Glan Road Picnic Area, LT 30♂♂2♀♀ 12 June 2015, MG/CC, det. MG; **L. Cutra** (R4698), MVLTS ♂♂ 23 June & ♂♂♀♀ 30 August 1996, KGMB, det. JPOC; **L. Lettercraffroe** (M0537), larvae 1996/1997, JW; **L. Mask** (M0957), Kilbeg Lower, LT 2♂♂2♀♀ 16 August 2014, MG; **L. Maumwee** [Manwee] (L9748), larvae 1996/1997, JW; **Oughterard** (M1343), adults 3-9 August 1926, MEM (BMNH); **R. Clare** (M4341), Bullaun, 14 larvae 2 November 1971, 2 larvae 15 February 1972, AFF, det. JPOC, (M4243), 2 larvae 11 August 1971, 13 larvae 22 August 1972, (M4136), Turlough Mor, larva 22 August 1972, (M4152), downstream of Tuam, 4 larvae 22 August 1972, (N8464), 87 larvae 11 August 1971, AFF, det. JPOC; **R. Shannon** (M9816), 3 larvae 26 July 1973, (M8705), u/s of Portumna, grab 22 larvae 12 July 1972, AFF, det. JPOC. **KERRY: Derriana L.** (V6073), 8♂♂5♀♀ 6 July & 10♂♂♀ 26 August 1973, JPOC; **Galway's Bridge** (V9180), ♂ 31 May 1995, JPOC; **Glenahho R.** (Q5410), 6♂♂ 7 July 1973, JPOC; **Kenmare** (V9471), ♂ 18 August 1902, JJFXK, conf. JPOC (NMI); **Killarney**, adults 12 June 1902, det. RMCL (BMNH), adult 2a August 1887 (BMNH), 2♂♂ 26 June & ♂ 27a June, ♂ 4 July & ♂ 8 July, ♂ 5 August & ♂ 8a August 1887, JJFXK, conf. JPOC (NMI); **Killarney lakes**, trout stomachs, 141 larvae, UCD, det. JPOC; **L. Caragh** (V7292), ♂♀ 5 July 1973,

2♂♂ 27 August 1973, JPOC; **L. Cummernamuck** (V7489), ♂ 5 July 1973, JPOC; **L. Currane** (V5065), Waterville, adult 18 August 1965, JRH; **L. Doon** [L. Slat] (Q6108), 3 larvae 6♂♂♀ 7 July 1973, JPOC; **L. Guitane** (W0385), 4♂♂ 3 July 1973, JPOC (NMI); **L. Leane**, 12 larvae exposed rocky shore, 2 larvae reed bed & 2 larvae sheltered rocky shore, 10 April 1973, (V9291), Golf Course, 20♂♂ 29 May 1974, ♂ 26 August 1987, (V9686), boat house, ♂ 5 September 1972, 6♂♂ 23 August 1973, 3♂♂ 28 May 1974, (V9488), Ross Island, 14♂♂ 18 May 1973, Ross Castle, 4♂♂♀ 29 May 1974, (V9291), Hotel Europe, 2♂♂ 5 September 1972, JPOC; **L. Nakirka** (V7389), 3♂♂♀ 27 August 1973, JPOC; **Muckross** (V9786), adults 18 August 1877, AEE (BMNH); **Muckross Lake** (V9685), Dundag Bay, IETS ♂ 30 July, ♂ 10 August, ♂ 25 August & ♂ 13 September 1973, grabs July 1973, 2m 5 larvae, 1.5m 2 larvae, UCD, det. JPOC, ♂ 19 April 1973, JPOC (NMI), (V9485), Colleen Baun, ♂ 20 June & ♂ 23 August 1973, 5♂♂ 28 May 1974, (V9685), Goleen 20♂♂13♀♀ 31 July-1 August 1973, (V9684), Torc Shore, ♂ 24 August 1973, all JPOC; **O'Sullivan's Cascade** (V9188), 2 larvae 13 April 1973, JPOC; **R. Behy** (V6589), ♂ 6-7 July 1973, JPOC; **R. Blackwater** (V7970), ♂ 4 July 1973, JPOC; **R. Caragh** (V7881), ♂♀ 2-3 August 1975 (NMI), (V7186), ♂ 27 August 1973, JPOC; **R. Cummeragh** (V5872), larva 6 July & ♂ 26 August 1973, JPOC; **R. Curraheen** (Q7811), LT ♂♂ 7-8 July 1973, JPOC (NMI); **R. Ferta** (V5282), larva, 3♂♂ 6 July & 4♂♂ 26 August 1973, JPOC; **R. Flesk** (V9789), 2♂♂ 3 July & ♂♂ 3 August 1973 (NMI), JPOC; **R. Gaddagh** (V8391), ♂2♀♀ 24 August 1973, JPOC (NMI); **R. Glenahoo** (Q5410), 3 larvae 7 July 1973, JPOC; **R. Inny** (V5673), 3♂♂♀ 26 August 1973, JPOC; **R. Maine** (Q8905), 4 larvae, ♀ pupa & 5♂♂3♀♀ 7 July & 5♂♂♀ 27 August 1973, JPOC; **R. Owenascaul** (Q5901), 2♂♂♂ 7 July 1973, JPOC; **R. Shanow** (Q8623), 3 larvae 28 August 1973, JPOC; **stream** (V6274), near Derriana L., ♂♂ 1-13 July 1979, JPOC (NMI); **stream** (V5873), ♂ pupa & ♂ 26 August 1973, JPOC; **stream** (V9673), entering Roughty R., ♂ 4 July 1973, JPOC; **stream** (Q9025), Kilflynn, ♂ pupa & 10♂♂ 7 August 1973, JPOC; **stream** (R0540), entering R. Galey, ♂♀ 29 August 1973, JPOC; **stream** (Q8905), entering R. Maine, larva 7 July 1973, JPOC; **Torc Cascade/stream** (V9684), ♂♂ 28 May 1974, JPOC (NMI); **Upper Lake, Killarney** (V9282), 6♂♂2♀♀ 29 May 1974, JPOC (NMI), (V9181), exposed shore, 14♂♂♀ & reed bed, 15♂♂♀ 29 May 1974, JPOC. **KILDARE: canal at Milltown** (N7617), ♂ 3 August 1986, CM/OSF (SINMNH); **Donadea Forest Park** (N8332), lake, ♂ 14 June 1987, JPOC; **R. Barrow** (S6892), near Athy, 3 larvae 2 December 2008, PS; **R. Boyne** (N6643), larvae April 1990 & July 1991, DAG/JML, det. JML; **Robertstown** (N7823) [Grand Canal], ♂ 3 July 1977, MDCW, det. JPOC (NMI); **Rye Water** (O0036), Leixlip, adult 14 June 1947, (N9239), Maynooth, adult 2 August 1948, JRH. **KILKENNY: R. Nore** (S4472), larvae 16 August 2004, PS, (S4470), Ballyragget, larvae 16 August 2004, PS. **LAOIS: Oweg (Ouveg) R.** (S4473), larvae 16 August 2004, PS; **R. Barrow** (N4709), 10 larvae 9 September 1971, downstream of confluence with R. Triogue, 15 larvae 8 September 1971, AFF, det. JPOC, (N6301),

Dunrally Bridge, ♂♀ 3 August 1986, CM/OSF (SINMNH). **LEITRIM: L. Boderg** (N0192), 6 larvae 19 July 1972, AFF, det. JPOC; **L. Bofin** (N0489), larva 20 July 1972, AFF, det. JPOC; **L. Gill** (G7933), Pier Bay, larvae 19 July 1989, DAG/JML, det. JML; **L. Melvin** (G9249), 2♂♂ 7 August 1992, JPOC. **LIMERICK: Galbally** (R7927), ♂ 14 June 1985, KGMB; **R. Shannon** (R6663), Castleconnell, LT 33♂♂7♀♀ 12-13 July 1973, JPOC. **LONGFORD: L. Forbes** (N0881), 2 larvae & ♂ pupa 20 July 1972, AFF, det. JPOC; **R. Shannon** (N0332), larva 13 July 1972, (N0116), u/s of Banagher, dredge 3 larvae 12 July 1972, AFF, det. JPOC. **MAYO: Achill** (F6405), ♂ 7 June 1909, det. KJM, conf. JPOC (NMI); **brook near Pontoon** (G2105), ♂ 18 August 1981, HM, det. H. Malicky; **Castlebar** (M1188), June-September 1964, MK; **Clare Island** (L6985), ♂ June 1909, JNH, det. KJM, conf. JPOC (NMI), larvae, peaty lakes, SF (det. IDW), MT ♂♀, SF, conf. JPOC (NMI); **Croagh Patrick** (L8981), Carrowmacloughlin, MVLT 2♂♂♀ 3 August 1989, KGMB, conf. JPOC; **L. Carra** (M1673), adults June-September 1964, MK; **L. Conn** (G2306), Foxford, adults 12 June 1946, JRH, (G1516), adult 16-23 September 1929, MEM (BMNH); **L. Mask** (M1259), (M1465), adults June-September 1964, MK; **L. Moher** (L9777), larvae 1996/1997, JW; **Louisburgh** (L8080), adult 19 July 1910, CJM, det JRAG (IM) (per IDW); **Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT ♀ 30 May-20 June 1997, MCDS, det. JPOC; **R. Aille** (M1574), larvae 27 August 1980, LW, det. JPOC (NMI); **R. Robe** (M1964), Ballinrobe, ♂ 19 May 1973, AFF, det. JPOC; **Sraheen L.** (F7100), Achill, ♀ June 1909, det. KJM, conf. JPOC; **Westport** (L9984), ♂, JJFXK, conf. JPOC (NMI). **MEATH: Kells Blackwater R.** (N8172), 4 larvae 8 July 1971, AFF, det. JPOC; **R. Blackwater** (N7245), Longwood, adult 20 May 1947, JRH, (N7377), west of Kells, 14♂♂8♀♀ 1 August 1986, CM/OSF (SINMNH), 6♂♂♀2♀ 13 June 1976, JPOC, (N8668), larvae 5 September 1988, DAG/JML, det. JML; **R. Boyne**, Ardmullen, adults 3 August 1945, 6 September 1946, JRH, (N8660), Bective, 45 larvae 5 September 1988, (N8968), Blackcastle, 10 larvae 9 September 1988, (N9070), Dunmore Castle, larva 5 September 1988, (N8865), Kilcarn, 26 larvae 5 September 1988, (N8767), near Navan, larva 5 September 1988, (N8056), near Trim, 25 larvae & ♂ pupa 5 September 1988, (N8768), The Mollies, 2 larvae 9 September 1988, MFOG, det. JPOC, (N6340), larvae July 1989, (N8057), larvae 5 September 1988, (N8659), larvae 5 September 1988, (N8865), larvae 5 September 1988, (N8768), larvae 5 September 1988, (N8868), larvae 5 September 1988, (N9070), larvae 5 September 1988, (N7149), larvae June 1989 & July 1991, (N7352), larvae June 1989, DAG/JML, det. JML; **R. Broadmeadow** (O0652), near Ashbourne, larva 28 July 1971, AFF, det. JPOC; **Stonyford R.** (N6956), larvae June 1989, all DAG/JML, det. JML. **MONAGHAN: Emyvale** (H6843), adult (NMS); **Glaslough** (H7241), adult (NMS), 2♂♂ 12 August 1973, JPOC; **Knappagh Water** (H6910), Billy Fox Memorial Park, 3♂♂ 30 May 2013, JPOC. **OFFALY: Little Brosna** (N6050), Birr, ♂ 8 September 1978, JPOC; **Mongan Bog** (N0330), LT ♂ 5 July 1983, JAG, det. JPOC; **Yellow R.**

(N5236), larvae June 1989, DAG/JML, det. JML. **ROSCOMMON: L. Key** (G8404), Rockingham Estate, ♂♀ 11 August 2001, JPOC, (G8506), 11 larvae & ♂ pupa 18 July 1972, (G8205), 13 larvae & 2♂♂ pupae 18 July 1972, (G8207), 35 larvae & ♂♀ pupae 17 July 1972, AFF, det. JPOC, (G8205), near Boyle R. inlet, ♂ 10 August 1996, PCB; **L. Ree** (N0245), Yellow Island, ♂ 22 August 1958, PHW (BMNH); **R. Shannon** (M9830), larva 13 July 1972, AFF, det. JPOC. **SLIGO: L. Arrow** (G7711), adults June-September 1964, MK; **L. Easky** (G4422), larva 1996/1997, JW; **L. Gara North** (G7101), larva 1996/1997, JW; **L. Gara South** (M6997), larvae 1996/1997, JW; **L. Gill** (G7232), lake outflow, larvae 20 July 1989, (G7733), Inishfree, larvae 20 July 1989, DAG/JML, det. JML; **L. Talt** (G3915), larvae 1996/1997, JW; **R. Easky** (G4032), near Patch, ♂ 24 August 1992, JPOC. **TIPPERARY: Breagagh R.** (S1458), 5 September 1991, DAG/JML, det. JML; **Brownstown R.** (S1665), larvae 5 September 1991 & 10 March 1992, DAG/JML, det. JML; **R. Ara** (R8735), u/s of Tipperary town, 14 larvae 18 August 1971, AFF, det. JPOC; **R. Black** (S1957), larvae 5 September 1991 & 10 March 1992, DAG/JML, det. JML; **R. Clover** (S1959), larvae 10 March 1992, DAG/JML, det. JML; **R. Drish** (S2163), larvae 10 March & 6 July 1992, (S2063), larvae 19 September 1991 & 10 March 1992, (S1961), larvae 19 September 1991, 10 March & 6 July 1992, (S1759), larvae 5 September 1991, 10 March & 6 July 1992, DAG/JML, det. JML; **R. Suir** (S1267), larvae 22 May 1992, (S1362), larvae 19 September 1991 & 22 May 1992, (S1258), larvae 22 May 1992, (S1255), larvae 19 September 1991, DAG/JML, det. JML. **WATERFORD: Colligan R.** (S2205), 6♂♂ 15 August 2000, JPOC; **Fennor** (S5201), at light, ♂ 12 July 1987, JPOC; **Portlaw Estate** (S4415), river, ♂ 16 July 1987, JPOC. **WESTMEATH: Kinnegad R.** (N6044), larvae July 1991, DAG/JML, det. JML; **L. Derravaragh**, IETS 1973/1974: (N4169), Coolure Bay, 23 adults, (N4366), near Old Court, 2 adults, (N4663), off point between Clinton's Bay and Crooked Wood, 6 adults, (N3968), bay near R. Inny, 2 adults, (N4168), near Derrya, 10 adults, PG; **L. Ennell** (N4146), adult 1 June 1947, JRH, (N4046), Tudenham, ♂ 9 July 1997, (N3847), 21 larvae sheltered rocky shore, 15 May 1973, JPOC, IETS 1973/1974: (N4048), Shaunoge Shallows, 2 adults, (N4045), Carrick Bay, 2 adults, (N3944), Robin's own shore, 2 adults, (N3844), mid lake off Robin's own shore, adult, PG; **L. Owel** (N4156), adults June-September 1971, MK, IET ♂ 25 August 1971, IFT, det. JPOC, larvae 1996/1997, JW, IETS 1973/1974: (N4056), Srudoora Island, 20 adults, (N3657), near Carrickphilbin Island, 2 adults, (N3859), near Wattstown, 6 adults, (N3960), Clonhugh shore, adult, (N4158), Gaynor Point, 32 adults, PG; **L. Ree**, JRH, (N0446), Hare Island, ♂ 19 June 1976, JPOC, (N0245), Carby [Carberry] Island, adult 18 August 1958, PHW (BMNH); **L. Sheelin** (N4381), off Goreport Point, IETS 1973/1974 adult, PG; **R. Deel** (N5565), larvae September 1989, April 1990 & July 1991, (N5854), larvae September 1989, (N5954), larvae September 1989 & April 1990, (N5953), larvae September 1989, April 1990 & July 1991, (N6949), larvae September 1989 & April 1990, DAG/JML, det. JML; **R. Shannon** (N0342), adult 20 August 1958, PHW

(BMNH), (N0538), larva 13 July 1972, AFF, det. JPOC. **WEXFORD: Clonea Strand** (X3997), stream, 2 larvae 23 July 1987, JPOC; **Courtown** (T2057), adults 2(?) August 1938, BPB (BMNH); **R. Slaney** (S9739), Enniscorthy, ♂ 27 July 2015, (S9738), ♂ 28 July 2015, all JPOC/MAOC, det. JPOC; **Wexford**, ♂ 28 June 1902, JJFX, det. JPOC (NMI). **WICKLOW: Annalecka Brook** (O0602), 3♂♂ 23 August 1973, JPOC; **Avondale** (T1986) [R. Avoca], ♂ 27 May 1988, JPOC; **Browns Beck Brook** (Carrigower R.) (S9194), 6♂♂ 23 July 1973, JPOC; **King's River** (O0302), tributary Glasnogothun Bridge, 45♂♂10♀♀ 6 June & LT 13♂♂♀ 22-23 July 1973, JPOC; **L. Dan**, 393 larvae exposed rocky shore, 48 larvae reed bed & 139 larvae sheltered rocky shore, 27 April 1973, (O1504), LTS 22♂♂ 22-23 September & 10♂♂2♀♀ 16 August 1972, 2♂♂10♀♀ 21-22 June 1973, all JPOC, (O1503), 10♂♂7♀♀4♂♂ 1 August & 6♀♀ 4 August 1972, ♂2♀♀ 19 August 1973, all JPOC, (O1502), lower end, ♂♀ 12 August 1973, JPOC, larvae 1996/1997, JW; **Lower L. Bray** (O1416), 4♂♂ 18 August 1973, (O1316), LT 3♂♂3♀♀ 21-22 July 1973, JPOC, larvae 1996/1997, JW; **Ow R.** (T0981), larva & 9♂♂ 28 July 1973, JPOC; **Polluphucha (Blessington) Reservoir** (O0108), 8♂♂ 6 June 1973, JPOC; **Potters R.** (T2985), larva & 4♂♂♀ 21 July 1973, JPOC; **Powerscourt Waterfalls** (O1912), 5♂♂ 31 July 1986, CM/OSF (SINMNH), JPOC; **R. Annamoe** [Inchavore] (T1799), 4 larvae 19 August 1973, JPOC; **R. Avoca** (T1982), 4♂♂ 21 July 1973, JPOC; **R. Avonbeg** (T1487), LT ♂ 19-20 September 1973, JPOC; **R. Avonmore** (T1593), larva & 7♂♂ 21 July 1973, (T1989), ♂♂♀ 22 May 1973, JPOC; **R. Bray** (O2518), ♂♂♀♀ 22 July (NMI) & 9♂♂ 14 August 1972, 7♂♂ 20 July 1973 (O2417), 7♂♂ 13 June 1973, JPOC; **R. Brittas** (O0218), 48♂♂ 6 June 1973, 4♂♂2♀♀ 18 August 1973, both JPOC; **R. Dargle** (O2216), 12♂♂ 16 August 1972, JPOC; **R. Derriana** [Derneen] (S9987), larva & 13♂♂ 23 July 1973, JPOC; **R. Glencree** (O2014), 2 larvae & ♂ 19 August 1973, JPOC; **R. Glencullen** (O1919), 10♂♂ 22 July & LT 3♂♂ 18-19 August 1973, JPOC; **R. Liffey** (O0514), Ballysmuttan, larva & 2♂♂ 22 July 1973, JPOC; **R. Slaney** (S8892), LT 9♂♂3♀♀ 24-25 July 1973, JPOC; **stream** (T1593), ♂ 21 July 1973, JPOC; **stream** (S8695), larva 20 September 1973, JPOC; **stream** (O1416), exiting Lower L. Bray, 4♂♂ 22 July & ♂ 18 August 1973, JPOC; **stream** (O0110), at Lacken, 15♂♂ 6 June 1973, JPOC; **stream/waterfall** (O0208), Kilmore, ♂♂ 6 June 1973, JPOC (NMI); **Upper Lake Glendalough** (T1096), larva 19 August 1973, 2♂♂ 19 August 1973, JPOC; **Upper L. Bray** (O1315), 2♂♂ 18 August 1973, JPOC; **Vartry R.** (T2796), ♂♂♀♀ 20 July 1973 (NMI), (O2108), 2♂♂ 19 August 1973, (O1903), LT 15♂♂3♀♀ 19-20 August 1973, (O2208), 36♂♂4♀♀ 4 August & 67♂♂3♀♀ 24 August 1972, Ashford (T2797), 14♂♂ 22 May 1973, JPOC.

48. *Polycentropus irroratus* (Curtis, 1835)

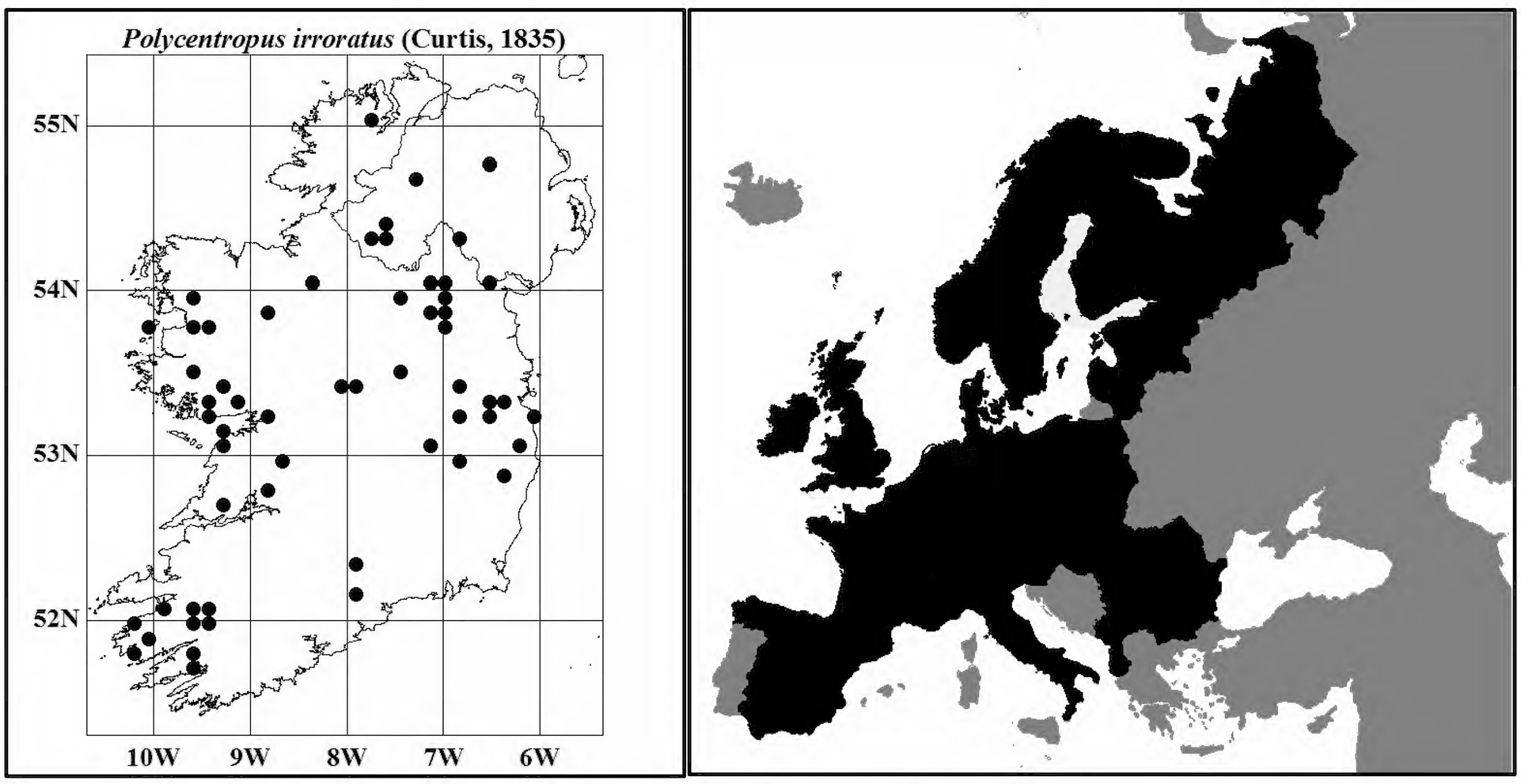
Polycentropus irroratus is widely distributed in Ireland but is rarer than *P. flavomaculatus*. The predacious larvae spin nets in lakes, rivers and streams. They

have also been reported from blanket bog (Hannigan and Kelly-Quinn, 2014). The species is widespread in Europe.

Flight period: June–September (21 June–6 September).

Counties and 10km squares: Armagh, Cavan, Clare, Cork, Derry, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Laois, Mayo, Meath, Monaghan, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wicklow (22/32). The species is known from fifty-seven 10km squares (57/1019).

FIGURES 119-120. Known Irish and European distributions of *Polycentropus irroratus*.



Published records

Morton, 1883 as *Polycentropus multiguttatus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* as *Polycentropus multiguttatus* (**DUBLIN:** Lucan (O0335) [R. Liffey]. **GALWAY:** near Ma'am Post Office (L9653). **KERRY:** Coppagh Glen (W0382); Denough [Deenagh] R. (V9792); Gap of Dunloe (V8787); Horses' Glen (V9981); Ross Castle (V9488); Torc Cascade (V9684). **MONAGHAN:** Glaslough (H7241). **MAYO:** Carrowbeg, R. (M0084); Knappagh [Knappaghbeg] (M0080), Mount Brown [Kinlooey] (M0381) and Prospect (L9581) Laoghs. **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WESTMEATH:** Ballykeeron [Ballykeeran] (N0744); Shannon (N0341)). *King and Halbert, 1910* as *Polycentropus multiguttatus* (**DONEGAL:** Kilmacrennan district (C1420) [Leannan R.]. **DUBLIN:** Lucan (O0335) [R. Liffey]. **GALWAY:** near Maam (L9653). **KERRY:** Gap of Dunloe (V8787); Killarney district, Torc (V9684); etc. **MAYO:** Carrowbeg R. (M0084); Knappagh [Knappaghbeg] (M0080), Mount Brown [Kinlooey] (M0381) and Prospect (L9581) Loughs. **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WATERFORD:** Glenshelane near Cappoquin (S1203). **WESTMEATH:** Ballykeeran (N0744); Shannon (N0341)). *Halbert, 1912* as *Polycentropus*

multiguttatus (**MAYO:** Westport (L9984)). *Mosely, 1927* as *Polycentropus multiguttatus* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Polycentropus multiguttatus* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Polycentropus multiguttatus* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Mosely, 1939* as *Polycentropus multiguttatus* (**GALWAY**). *Neboiss, 1963* (**GALWAY:** Galway, July [1835, J. Curtis]). *Hickin, 1967* (**GALWAY**). *Partridge and Foy, 1972* (**MAYO:** L. Feeagh (L9799)). *Moriarty, 1972a* ([**GALWAY**]**:** L. Corrib, south (M2434)). *Bracken and Murray, 1973* (**CORK:** L. Avaul (V9153)). *Moriarty, 1973a* (**GALWAY:** L. Corrib (M2030) = [M2434]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7106). **WICKLOW:** L. Dan (O1502), adults). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7192)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake; Upper Lake [Killarney] (V8991), (V9181)). *O'Connor, 1987* (**IRELAND:** widespread). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 3 out of 70 sampled sites). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706) and near Murroogh (M1508)). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk; R. Laune (V8991), the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 17 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Donohue et al., 2009* (**IRELAND**). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lake (R5188), 262m. **GALWAY:** lowland lakes (M0430), (M0329), (M0329), (M0929), (M0229), (M0927), (M0927)). *Little and Free, 2013* (**KERRY:** L. Currane (V5165). **MAYO:** Urlaur L. (M5188)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Flesk (V9789); R. Inny (V5572)). *O'Connor and Davy-Bowker, 2014* (**ARMAGH:** Forkhill R. (J0115). **DERRY (LONDONDERRY):** R. Moyola (H9590). **FERMANAGH:** Foxhill Burn (H2752); R. Arney (H1737)). *Hannigan and Kelly-Quinn, 2014* (**IRELAND:** blanket bog). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Upper L. Erne (H2339)).

Unpublished records and voucher specimens

CAVAN: Corrakane L. (H4000), small lake, LT ♂♀ 4-5 August 1973, JPOC; **L. Cuilcagh** (N6389), larva reed bed, 29 March 1973, JPOC; **L. Mullagh** (N6785), larva exposed rocky shore, 3 April 1973, JPOC; **L. Sillan** (H6906), ♂ 11 August 1972 (NMI), LT ♂ 31 July-1 August, 1973, JPOC; **R. Annalee** (H6810), ♂ 1 September 1972, JPOC; **R. Laragh** (H5210), LT ♂ 2-3 August 1973, JPOC; **stream** (N6193), ♂ 2 August 1972, JPOC. **CLARE: Cloon R.** (R1759), 6♂♂ 8 July 1973, JPOC; **R. Rinne** (R4174), larva 12 July 1973, JPOC. **CORK: L. Avaul** (V9153), September 1969, MK; **L. Coomeenaloughaun** (V8661), larva 10 March 1972, JPOC. **DUBLIN: R. Poddle** (O1129), Templeogue, adult 18 August 1947, JRH. **GALWAY: Dunkellin**

R./Rahasane Turlough (M4719), larva 26 May 1984, PB, det JPOC; **Inverin** (M0822), adults 17 July-2 August 1926, MEM, ♂ conf. JPOC (BMNH); **Oughterard** (M1343), adult 3-9 August 1926, MEM (BMNH). **KERRY: Blue Pool** (V9786), streams, ♂♀♀ 30 August 1987, JPOC; **Doolough** (V9585), LTS ♂ 2-3 July & 10♂♂ 28-29 July 1973, JPOC; **Killarney**, 2♂♂ 5 July 1887, JJFXK, conf. JPOC (NMI); **L. Currane** (V5267), ♂ 25 August 1973, JPOC; **L. Leane** (V9188), ♂ 6 September 1972, JPOC; **Muckross Lake** (V9685), Dundag Bay, IETS ♂ 11 August (NMI) & ♂ 25 August 1972, 5♂♂ 10 August 1973, IFT, det. JPOC, 2m grab larva 1973, IET ♂♀ 18 August 1972 (NMI), det. JPOC, (V9485), LT ♂♂ 27-28 July 1973, JPOC (NMI); **R. Cummeragh** (V5872), ♂ 26 August 1973, JPOC; **R. Ferta** (V5282), ♂ 26 August 1973, JPOC; **R. Laune** (V8892), larva 16 November 1971, EJW (NMI), (V8991), larvae July 1972, EJW (NMI); **Upper Lake, Killarney** (V8981), larva July 1972, larva August 1972, dredge 6 larvae 1972, EJW (NMI). **KILDARE: near Robertstown** (N7823) [Grand Canal], ♂ 3 July 1977, MDCW, det. JPOC (NMI); **R. Greese** (S7488), Kilkea, adult 21 June 1947, JRH. **LAOIS: R. Barrow** (N6301), Dunrally Bridge, ♂ 3 August 1986, CM/OSF (SINMNH). **MAYO: Clare Island** (L6985), MT ♂♀♀ 10 August 1998, SF, conf. JPOC (NMI). **MEATH: R. Blackwater** (N7739), below Enfield, adult 27 July 1947, JRH. **MONAGHAN: Glasslough** (H7241), ♂ (NMS). **SLIGO: L. na Léibe (L. Labe)** (G7212), adult, MK. **TIPPERARY: R. Suir** (S0424), Cahir, 7♂♂ 3 August 1986, CM/OSF (SINMNH). **TYRONE: Boorin Wood** (H5085), LT ♀ 3 September 2014, KGMB, det. JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 18 August 1888, JJFXK, conf. JPOC (NMI); **L. Ennell** (N3847), larva sheltered rocky shore, 15 May 1973, JPOC. **WICKLOW: Lisheens Stream** (O0219), 2 larvae 1981, COK, det. JPOC (NMI); **L. Dan** (O1502), ♂ 24 August 1972, larva exposed rocky shore, 24 April & LT ♂ 21-22 June 1973, JPOC; **Ow R.** (T0981), 3♂♂ 28 July 1973, JPOC; **R. Bray** (O2518), ♂ 2 August 1972, JPOC.

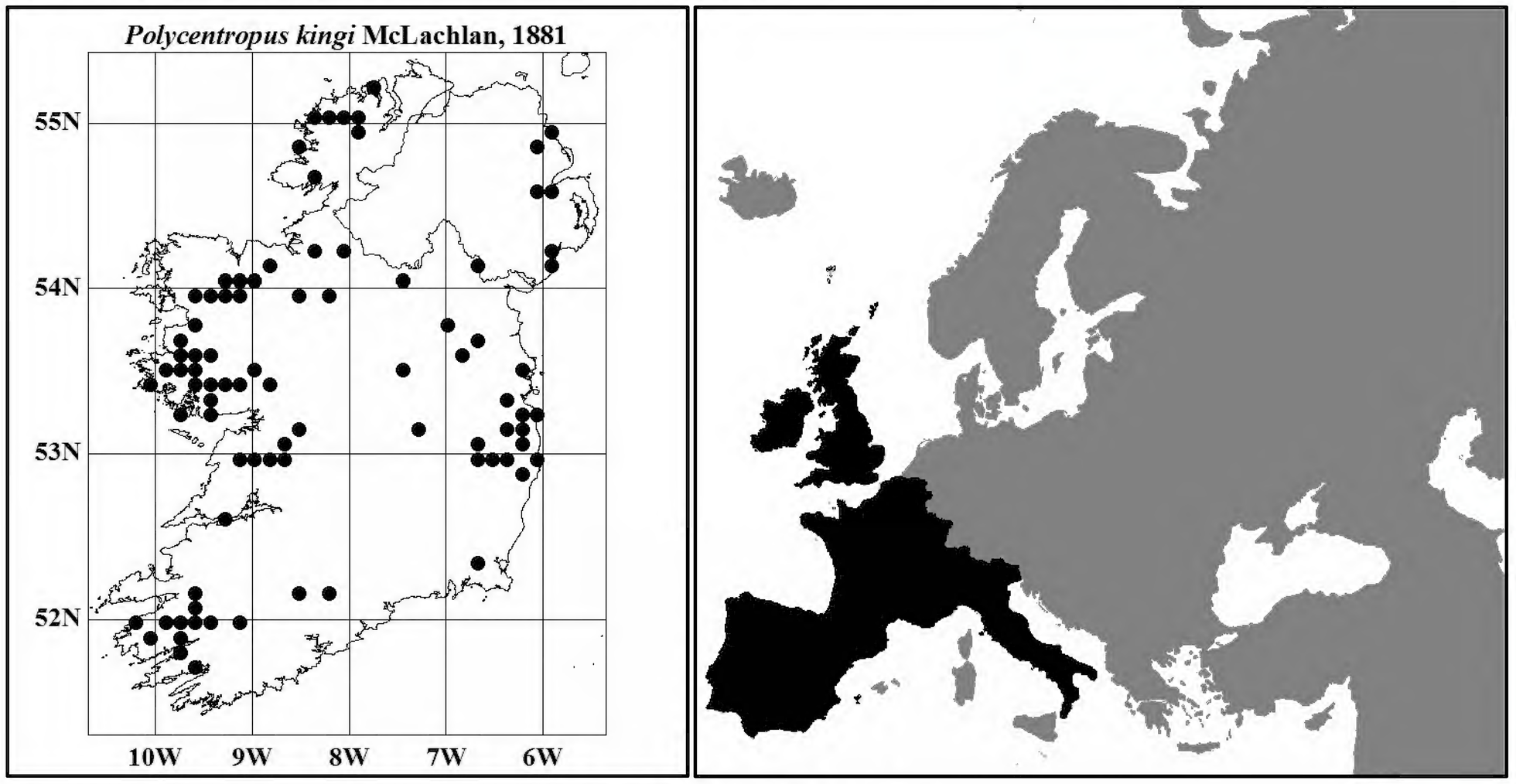
49. *Polycentropus kingi* McLachlan, 1881

Polycentropus kingi is widely distributed in Ireland but rarer than *P. flavomaculatus*. Barnard and Ross (2012) state that adults are usually on the wing for a very short time in any particular locality. They add that it is possibly over-recorded as a larva because of identification problems. The predacious larvae spin nets in lakes, rivers and streams. *P. kingi* has a restricted European distribution compared to the other two species.

Flight period: July–September (3 July–6/16 September [taken in the period 6 to 16 September by Mosely]).

Counties and 10km squares: Antrim, Cavan, Clare, Cork, Donegal, Down, Dublin, Galway, Kerry, Laois, Mayo, Meath, Monaghan, Roscommon, Sligo, Westmeath, Wexford, Wicklow (18/32). The species is known from eighty-six 10km squares (86/1019).

FIGURES 121-122. Known Irish and European distributions of *Polycentropus kingi*.



Published records

McLachlan, 1885 (**ANTRIM:** Colin Glen (J2771)). *King, 1888a* (**ANTRIM:** Colin Glen (J2771). **KERRY:** Gap of Dunloe (V8787); Glena (V9386) [beside L. Leane]; Horses' Glen (V9981); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084)). *King and Halbert, 1910* (**ANTRIM:** Colin Glen (J2771). **KERRY:** Gap of Dunloe (V8787); Glena (V9386) [beside L. Leane]; Horse's Glen (V9981); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084)). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Mosely, 1939* (**GALWAY**). *Frost, 1942* (**WICKLOW:** Ballysmuttan (O0514) [R. Liffey]). *Praeger, 1950* (**ANTRIM**. **KERRY:** four stations. **MAYO**). *Hickin, 1967* (**GALWAY**). *Moriarty, 1973a* (**ROSCOMMON:** L. Key (G8000) = [G8304]. **SLIGO:** L. Gill (G7030) = [G7232]). *Moriarty, 1973b* (**SLIGO:** L. Gill (G7232)). *Bracken and Murray, 1973* (**CORK:** L. Avaul (V9153)). *Moriarty, 1974* (**ROSCOMMON:** L. Key (G8304)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**WICKLOW:** L. Dan (O1502), adults). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane). *O'Connor, 1987* (**IRELAND:** widespread). *Twomey and Giller, 1991* (**CORK:** tributary of R. Araglin (R8702)). *Giller and Twomey, 1993* (**CORK:** Glenfinnish R. (R8702); R. Awbeg (R6804)). *Sangpradub and Giller, 1994* (**CORK:** Glenfinnish R.). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 3 out of 70 sampled sites). *O'Connor and Wise, 2004* (**KERRY:** R. Laune (V8991), the grid reference for Station 2 should read (V8892)).

Bradley and Kelly-Quinn, 2005 (**IRELAND:** 17 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Donohue et al., 2009* (**IRELAND**). *Atalah et al., 2010* (**IRELAND**). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lakes (R5088), 273m, (R5188), 262m. **CORK/KERRY:** upland lakes (W1881), 426m, (W1881), 429m. **GALWAY:** upland lake (M5403), 282m, lowland lakes (M0430), (M0329), (M0229), (M0927)). *Little and Free, 2013* (**DONEGAL:** Keel [Red Water] L. (B8416); Kiltooris Lake (G6797); Kindrum L. (C1843); L. Anure (B8216); L. Veagh [Beagh] (C0121); Namanfin (G7982). **GALWAY:** Ballynakill L. (L8622); Cloongat [Cloonagat[L. (L6847); Derryclare (L8248); Gartan L. (C0515); Kylemore L. (L7755); Lettererfroe L. (M0537); L. Ardderry (L9945); L. Anaserd (L6044); L. Corrib (M2541); L. Hibbert (L8822); L. Maumwee [Manwee] (L9748); L. Maumeen [the grid reference of L6141 appears to be in the sea and not included]; L. Nafooey (L9759); L. Shindilla (L9646); Namanfin [lake top of Corker R. near Ardara] (G7983); Nambrackkeagh [lake] (L8260). **KERRY:** Cloonee L. (middle) (V8164); L. Barfinnihy (V8476). **MAYO:** Ballymore L. (G2912); Beltra L. (M0798); Derryhick L. (M2099); Glencullin [Glenullin] L. (L8169); Islandeady L. (M0988); L. Conn (G1810); L. Cullin (G2303); L. Feeagh (F9600); L. Mask (M1060). **MONAGHAN:** L. Muckno (H8319). **SLIGO:** L. Talt (G3915). **WESTMEATH:** L. Ennell (N4146). **WICKLOW:** L. Tay (O1607)). *O'Connor, 2013b* (**KERRY:** R. Inny (V5572)). *O'Driscoll et al., 2013* (**MAYO:** Glennamong (F9303), (F9403)); streams above L. Feeagh (F9403)). *O'Driscoll et al., 2014* (**MAYO:** Glennamong R. (F9303); Srahrevagh R. (G0004)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Douglas Burn (J2299); R. Glenarm (D3114). **DOWN:** R. Annalong (J3719); R. Shimna (J3532)). *Baars et al., 2014* (**IRELAND:** recorded in 11 of 12 upland peatland lakes). *Anon., 2015a* (**CLARE:** Dromore Nature Reserve (R3586). **DUBLIN:** Liffey Valley Park, Waterstown (O0835). **WICKLOW:** L. Bray, Wicklow Mountains National Park (O1315)).

Unpublished records and voucher specimens

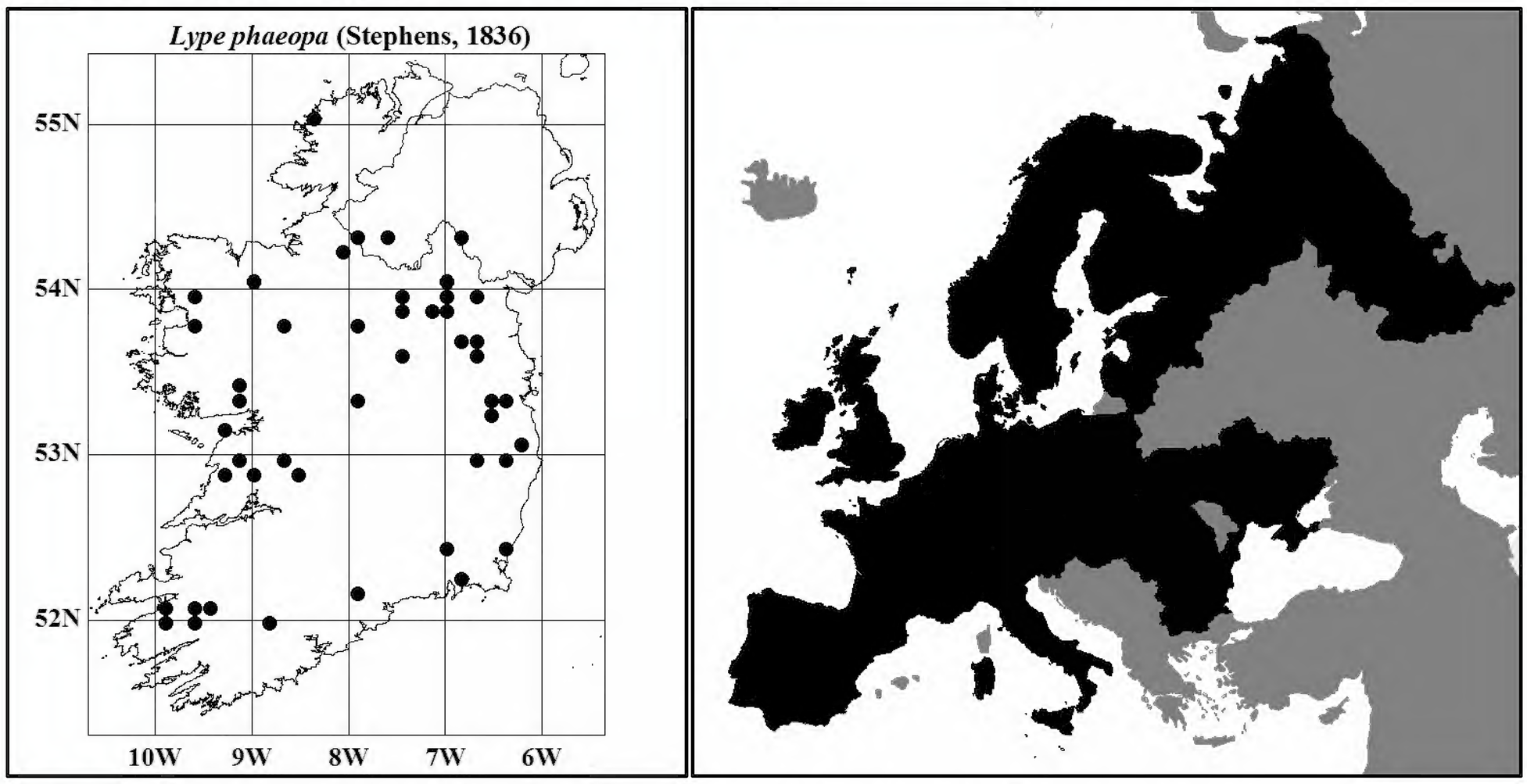
ANTRIM: Belfast (J3473), ♂ 1885, CGB, det. RMCL, conf. JPOC (BMNH). **CAVAN: L. Moneen** (G9828), 2♂♂ 3 August 1973, JPOC; **L. Mullagh** (N6785), larva 1996/1997, JW; **L. Oughter** (H3308), larva 1996/1997, JW. **CLARE: Lickeen Lake** (R1891), larvae March and April 1997 JW. **L. Cullaun** (R3290), larva 1996/1997, JW; **L. Graney** (R5691), larvae 9 July 1996, JW; **L. Inchiquin** (R2789), larva 1996/1997, JW; **R. Cloon** (R1656), ♂ 29 August 1973, JPOC (NMI). **CORK: L. Avaul** (V9153), adult, MK; **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.). **DONEGAL: Glenveagh National Park** (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT 5♂♂ 10-30 July 1998, MCDS, det. JPOC. **DUBLIN: R. Broadmeadow** (O1848), larva 17 December 1972, AFF, det. JPOC; **R. Dargle** (O2216), ♂ 16 August 1973, JPOC (NMI). **GALWAY: Clare R.** (M4049),

larva 1 August 1971, (M4243), larvae 2 November 1971 & 15 February 1972, AFF, det. JPOC; **Connemara National Park** (L7455), Polladirk R., larvae 1991, SV, conf. JPOC; **Inverin** (M0822), adults 17 July-2 August 1926, MEM (BMNH); **L. Lettercraffroe** (M0537), larvae 1996/1997, JW; **L. Maumwee** [Manwee] (L9748), larvae 1996/1997, JW; **L. Rea** (M6215), larvae 1996/1997, JW; **Oughterard** (M1343), adults 3-9 August 1926, MEM (BMNH). **KERRY: Caragh R.** (V7086), ♂ 2-3 August 1975, JPOC (NMI); **Crinnagh R.** (V9481), 2♂♂ 4 August 1986, CM/OSF (SINMNH); **Cummeragh R.** (V5872), ♂ 26 August 1973, JPOC; **Galway's Bridge** (V9180), stream, ♂ 4 July 1973, JPOC; **Killarney**, ♀, Morton Coll. (NMS), adult July 1946, BPB, det. JRH; **L. Looscaunagh** (V8879), ♂ 4 August 1986, CM/OSF (SINMNH); **O'Sullivan's Cascade** (V9188), 3 larvae 13 April 1973, JPOC; **R. Ferta** (V5282), 2♂♂ 26 August 1973, JPOC; **stream** (V6986), at Caragh Lake, 2♂♂ 27 August 1973, JPOC; **stream** (V9182), at the Tunnel, Upper Lake, Killarney, ♂ 3 July 1973, JPOC; **stream** (Q9602), larva 7 August 1973, JPOC. **LAOIS: R. Barrow** (N4709), larva 8 September 1971, AFF, det. JPOC. **MEATH: R. Blackwater** (N6778), larva 8 July 1971, AFF, det. JPOC; **R. Boyne** (N9271), Stackallen, adult 23 August 1947, JRH; **R. Boyne Blackwater** (N7957), tributary, larva 16 December 1971, AFF, det. JPOC. **SLIGO: L. Easky** (G4422), larva 1996/1997, JW; **L. Gara South** (M6997), larva 1996/1997, JW. **WEXFORD: Corock R.** (S8921), Marabeg Bridge, ♀ 20 July 2015, JPOC/MAOC, det. JPOC. **WICKLOW: Annamore R.** [Inchavore] (T1799), 6♂♂ 19 August 1973, JPOC; **Avoca R.** (T1982), ♂ 21 July 1973, JPOC; **Avonmore R.** (T1593), 3♂♂ 21 July 1973, JPOC; **Brown's Beck Brook** (S9398), ♂ 24 July 1973, (S9194), (Carrigower R.), 2 larvae & ♂ 23 July 1973, JPOC; **Dargle R.** (O2216), ♂ 16 August 1972, JPOC; **Derriana R.** [Dereen R.] (S9987), larva & 11♂♂ 23 July 1973, JPOC; **Glencree R.** (O2014), 3♂♂ 19 August 1973, JPOC; **Glencullen R.** (O1919), larva & ♂ 22 July & LT ♂ 18-19 August 1973, JPOC; **Laragh** (T1496), adult 4 August 1968, FBA, det. T. T. Macan (per IDW); **L. Dan** (O1502), ♂ 24 August 1973, JPOC, larva 1996/1997, JW; **Lower L. Bray** (O1316), 60♂♂ 18 August 1973, JPOC, larvae 1996/1997, JW, (O1416), stream exiting lake, 11♂♂ 18 August 1973, JPOC; **Powerscourt Waterfalls** (O1912), 2♂♂ 31 July 1986, CM/OSF (SINMNH), JPOC; **R. Bray** (O2518), 4♂♂ 14 August 1972 (NMI), ♂ 20 July 1973, JPOC; **R. Liffey** (O0514), Ballysmuttan, larva & 2♂♂ 22 July & ♂ 18 August 1973, JPOC; **R. Slaney** (S8892), LT ♂ 24-25 July 1973, JPOC; **Upper Lake, Glendalough** (T1096), ♂ 21 July & ♂ 19 August 1973, JPOC; **Upper L. Bray** (O1315), 3♂♂ 18 August 1973, JPOC; **Vartry R.** (T2797), larva & 2♂♂ 26 July (NMI) & ♂ 19 August 1973, (O2208), 2♂♂ 24 August 1973, JPOC.

PSYCHOMYIIDAE

50. *Lype phaeopa* (Stephens, 1836)

FIGURES 123-124. Known Irish and European distributions of *Lype phaeopa*.



Lype phaeopa is widely distributed in Ireland. The larvae construct galleries on submerged rotting branches and twigs in kettle holes, lakes, ponds, rivers and streams. In preference, the adult females lay their eggs on moist emergent or submerged parts of woody debris with a structured surface. If necessary, they can crawl into the water along emergent wood pieces and often swim to nearby submerged wood. The eggs are commonly deposited in cracks and crevices using the elongated ovipositor. This is primarily a protection mechanism against potential predators of eggs, such as leeches, water mites or other egg suckers (Spänhoff *et al.*, 2003a). The nutritional value of woody debris is low and the larvae have only a limited capability for digesting components. Although wood components dominate in the gut content, the primary food source is probably the epixylic biofilm (Spänhoff *et al.*, 2003b). The species is widespread in Europe.

Flight period: April–September (28 April–30 September).

Counties and 10km squares: Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Leitrim, Longford, Mayo, Meath, Monaghan, Roscommon, Sligo, Waterford, Westmeath, Wexford, Wicklow (19/32). The species is known from forty-six 10km squares (46/1019).

Published records

Morton, 1883 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* (**KERRY:** Ross Castle (V9488). **MAYO:** Prospect Laogh (L9581). **MONAGHAN:** Glaslough (H7241)). *King and Halbert, 1910* (**KERRY:** Ross Castle (V9488). **MAYO:** Prospect L. (L9581). **MONAGHAN:** Glaslough (H7241)). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7192)). *O'Connor*

and Wise, 1984 (**KERRY:** L. Leane; Muckross Lake; Upper Lake [Killarney]). *O'Connor, 1987* (**IRELAND:** widespread). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Donohue et al., 2009* (**IRELAND**). *Atalah et al., 2010* (**IRELAND**). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**DONEGAL:** L. Anure (B8216). **GALWAY:** L. Corrib (M2541). **LEITRIM:** L. McNean [Macnean Upper] (H0239). **ROSCOMMON:** Errit L. (M5485). **SLIGO:** L. Talt (G3915)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); R. Flesk (V9789)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *O'Connor and O'Connor, 2015a* (**FERMANAGH:** Upper L. Erne (H2339)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Mill L. (H2438); R. Erne (H2637); Upper L. Erne (H2339)).

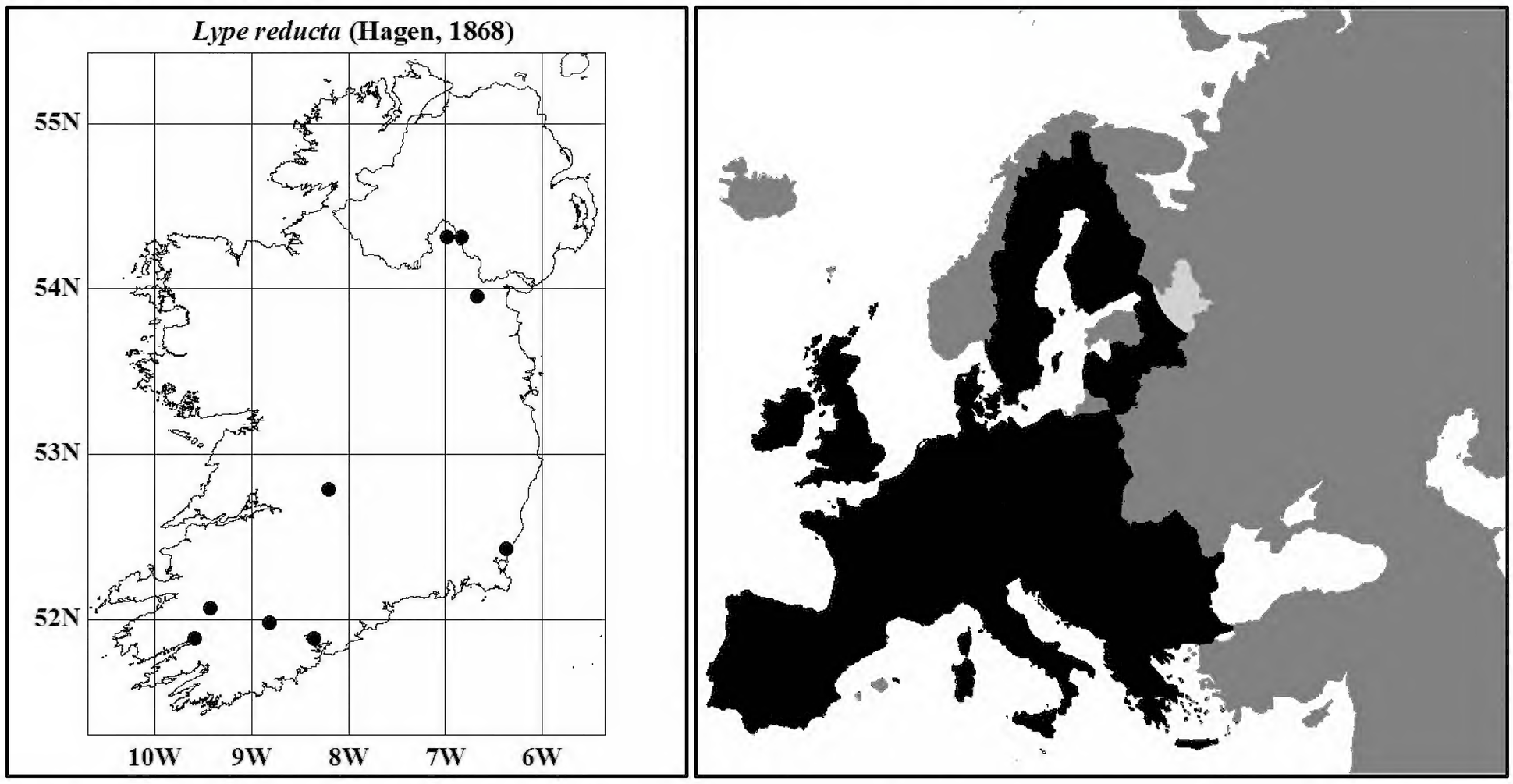
Unpublished records and voucher specimens

CAVAN: Corrakane L. (H4000), small lake, LT ♀ 4-5 August 1973, JPOC; **L. Cuilcagh** (N6389), ♂ 20 May 1974, JPOC; **Moneen L.** (G9828), 3♂♂♀ 3 August 1973, JPOC; **R. Annalee** (H6808), ♂ 30 September 1972 (NMI), (H7205), 4♂♂ 27 July 1972 (NMI), (H7206), 6♂♂♀ 1 August 1973, (H6810), 14♂♂♀ 1 September 1972, JPOC; **R. Erne** (N4293), 3♂♂ 5 August 1973, JPOC; **stream** (N6193), ♀ 2 August 1973, JPOC. **CLARE: L. Derg** (R6878), ♂♀ 13 July 1973, JPOC (NMI); **L. Graney** (R5691), 7♂♂ 3 September 1973, JPOC; **L. Inchiquin** (R2789), LT ♂ 31 August-1 September 1973, JPOC; **L. Moghna** (R1384), 2♂♂ 30 August 1973, JPOC. **R. Caher** (M1608), ♀ 30-31 August 1973, JPOC; **R. Fergus** (R3478), Ennis, ♂ 2 September 1973 (NMI), (R2591), above L. Inchiquin, ♂ 1 September 1973, JPOC. **DUBLIN: R. Liffey** (O0335), Weir, Lucan, 3♂♂♀ 31 July 1986, JPOC, (O0735), near Lucan, ♂ 31 July 1986, CM/OSF (SINMNH). **FERMANAGH: R. Erne** (H2637), Cloonatrig, Bellanaleck, LT ♂ 1-2 September 2015, JPOC/MAOC, det. JPOC (NMI); **Upper L. Erne** (H2339), Bellanaleck, ♀ 14 May 2015 (NMI), ♀ 2 September 2015, JPOC/MAOC, det. JPOC. **GALWAY: L. Corrib** (M2531), Lower, ♂ 18 May 1980, BC, conf. JPOC (NMI). **KERRY: Crinnagh R.** (V9481), ♂ 4 August 1986, CM/OSF (SINMNH); **Doolough** (V9586), MT ♂♂♀ 26-29 April 2005, CR; **Doolough/L. Leane** (V9585), Juniper Bay, ♂ 29 May 1973, JPOC; **L. Leane** (V9686), reed bed, 4 larvae 10 April 1973, near boat house, ♂ 5 September 1972 (NMI), 7♂♂2♀♀ 28 May 1974 (NMI), (V9488), Ross Castle, ♂ 29 May 1974, JPOC; **Muckross Lake** (V9684), near Torc, 6♂♂ 8 July 1986, (V9486), Camillan Bay, ♀ 20 June 1973, (V9485), Colleen Baun, ♂ 28 May 1974, JPOC; **R. Caragh** (V7184), ♀ 3 July 1973, JPOC; **R. Flesk** (W0387), 3 larvae May 1972, EJW (NMI); **Upper Lake, Killarney** (V9182), Tunnel, ♂ 7 July 1973, (V9181), ♂ 29 May 1974, JPOC. **LONGFORD: R. Shannon** (N0332), dredge larva 13 July 1972, AFF, det. JPOC, (N0684), north of L. Forbes, ♂ 16 July 1978, JPOC. **MEATH: Kells Blackwater R.** (N8172), larva 8 July 1972, AFF, det. JPOC; **R. Boyne** (N9271), Stackallen, adult 6

September 1946, JRH, (N8865), ♂ 30 May 1986, JPOC, (N8768), ♂♂ 24 May 1988, MFOG, det. JPOC. **MONAGHAN: Glasslough** (H7241), adult August 1892, Morton Coll. (NMS); **L. Moylemuck** (H6415), ♂ 27 July 1972, JPOC; **Nuremore** (H8502), pond, ♂ 28 April 2011, JPOC. **WATERFORD: R. Blackwater** (X0498), Lismore, ♂ 20 May 1999, JPOC. **WESTMEATH: L. Owel** (N4156), IET ♂♀ 29 May 1974, PG, det. JPOC, larva 1996/1997, JW, (N4056), Srudoora Island, IETS 1973/1974 4 adults, PG. **WEXFORD: Glenbough** (T0729), kettlehole near, ♂♀ 28 May 1987, JPOC; **near Island Bridge, New Ross** (S7230), streams in ornamental gardens, ♀ 29 June 2014, JPOC/MAOC, det. JPOC; **Tintern Abbey** (S7910), streams, 2♂♂ 1 July 2014, JPOC/MAOC, det. JPOC. **WICKLOW: Lower Lake, Glendalough** (T1196), ♂ 21 July 1973, JPOC; **R. Annamoe** (T1799), ♂ 19 August 1973, JPOC; **R. Brittas** (O0218), ♂ 6 June 1973, JPOC; **R. Slaney** (S8892), LT ♀ 24-25 July 1973, JPOC (NMI).

51. *Lype reducta* (Hagen, 1868)

FIGURES 125-126. Known Irish and European distributions of *Lype reducta*.



The first Irish record was based on larvae recorded from County Kerry by Edington and Alderson (1973). Subsequently, an adult was trapped at the larval site (O'Connor, 1978a). Its identity was confirmed by John Edington. *Lype reducta* is a rare Irish species compared to *L. phaeopa*. Waringer and Graf (2011) state that in addition to larvae, the collection of ripe pupae or adults is strongly recommended for the identification of both species The larvae construct galleries on submerged rotting branches and twigs in marshes, rivers and streams. Sode and Wiberg-Larsen (1993) showed that the adults did not disperse away from their breeding stream, so it is very probable that they oviposit close to the habitat where they spent their juvenile life. The species is widespread in much of Europe.

Flight period: (April) June–August (9 June–30 August). An adult was also taken on

28 April. There are only a small number of Irish adult records. Barnard and Ross (2012) give the British flight period as May–August.

Counties and 10km squares: Cork, Kerry, Monaghan, Tipperary, Wexford (5/32). The species is known from nine 10km squares (9/1019).

Published records

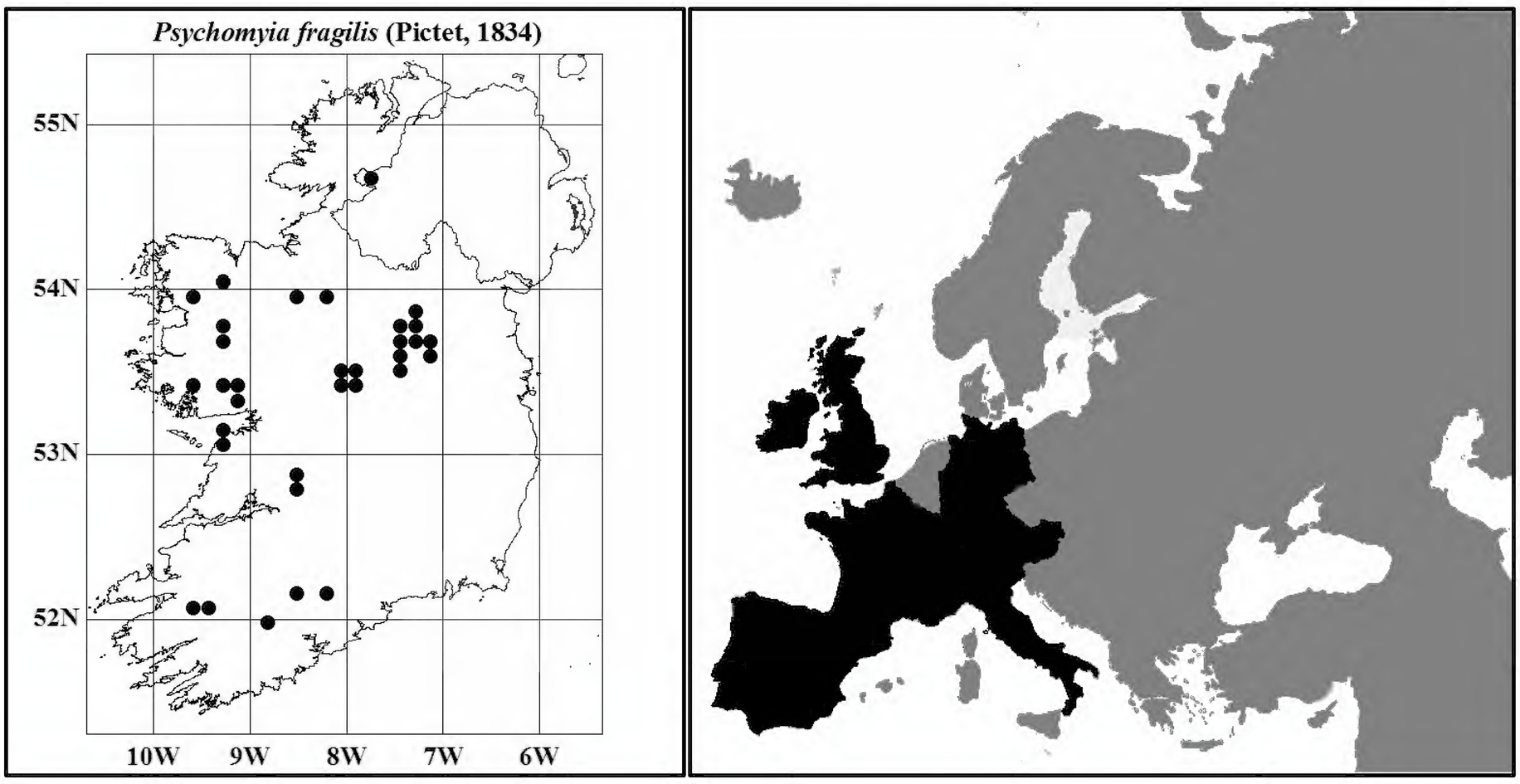
Edington and Alderson, 1973 (**KERRY:** larva). *O'Connor, 1978a* (**KERRY:** larva, adult). *O'Connor, 1987* (**CORK**. **KERRY**. **MONAGHAN**. **TIPPERARY**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Kelly-Quinn et al., 2003* (unreliable larval identification (Wallace, pers. comm.)). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Kelly-Quinn et al., 2005* (unreliable larval identification (Wallace, pers. comm.)). *O'Connor and Nelson, 2012* (**KERRY**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** R. Flesk (V9789)). *Callanan, Baars and Kelly-Quinn, 2014* (unreliable larval identification (Wallace, pers. comm.)).

Unpublished records and voucher specimens

CORK: Fota Wildlife Park (W7871), ♂ 5 August 1986, KGMB, det. JPOC (NMI); **R. Shournagh** (W4982), small stream, larva 23 May 1975, MM, det. JPOC (NMI). **KERRY: Cloghereen** (V9887), flying around a spring fed channel full of moist peat and old wood in woodland leading to a small tributary of the Blue Pool, 4♂♂ 30 August 1987, JPOC (NMI); **R. Flesk** (V9789), ♂ 24-25 August 1973, JPOC, confirmed J. M. Edington (NMI). **Roughty R.** (V9371), ♂ 4 July 1973, JPOC. **MONAGHAN: Emyvale** (H6843), ♂ 20-30 July [1885-6], Morton Coll., conf. JPOC (NMS); **Glasslough** (H7241), ♂ August 1892, Morton Coll., conf. JPOC (NMS); **Nuremore** (H8502), pond, ♂ 28 April 2011, JPOC. **TIPPERARY: Kilmastulla R.** (R9173), larvae/adults 1976-1977, MAOC. **WEXFORD: Curracloe** (T1127), ♀ 9 June 1982, at marshes behind the sand-dunes, JPOC.

52. *Psychomyia fragilis* (Pictet, 1834)

FIGURES 127-128. Known Irish and European distributions of *Psychomyia fragilis*.



Psychomia fragilis is a common but localised Irish species. The gallery forming larvae are reddish in colour and occur on stones, rocks etc. in calcareous lakes, rivers and streams. They scrape algae off the solid surfaces. The species has a limited European distribution, mainly southern and western.

Flight period: June–September (28 June–16 September).

Counties and 10km squares: Cavan, Clare, Cork, Galway, Kerry, Mayo, Meath, Roscommon, Sligo, Tyrone, Westmeath (11/32). The species is known from thirty-three 10km squares (33/1019).

Published records

King, 1888a as *Lype* (**GALWAY:** Laogh Corrib (near Galway) (M2829). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]; Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosam [Coosan] Point (N0446) [L. Ree]; Hare Island (N0446) [L. Ree]; Shannon Side (N0243)). *King, 1889a* as *Lype* (**GALWAY:** Laogh Corrib. **ROSCOMMON:** Yewpoint (N0146) [L. Ree]; Summerhill (N0040) [Cross R. at Crannagh]. **WESTMEATH:** Coosam [Coosan] Point; Hare Island (N0446), Laogh Ree). *King and Halbert, 1910* as *Lype* (**GALWAY:** L. Corrib near Galway (M2829). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]; Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Hare Island (N0446) [L. Ree]; Shannon side (N0243)). *Mosely, 1930* as *Metalype* (**GALWAY:** Oughterard (M1343)). *Mosely, 1939* as *Metalype* (**GALWAY:** L. Corrib (M2829)). *Praeger, 1950* as *Lype* (**GALWAY**. **ROSCOMMON**. **WESTMEATH**). *Hickin, 1967* as *Metalype* (**GALWAY:** L. Corrib (M2829)). *O'Connor and Norton, 1977* as *Metalype* (**WESTMEATH:** Hare Island, L. Ree (N0446)). *Speight, 1977* as *Lype* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan Point (N0446)]); Hare Island (N0446)). *Botosaneanu and Malicky, 1978* as *Metalype* (**IRELAND**). *O'Connor and O'Connor, 1982* as *Metalype* (**CAVAN:** L. Sheelin (N4686). **CLARE:** Caher R. (M1508); L. Derg (R6878). **GALWAY**. **ROSCOMMON:** L. Key (G8205). **WESTMEATH:** L. Ennell (N4148). **NO COUNTY:** R. Shannon between L. Key and Athlone town). *O'Connor, 1987* as *Metalype* (**CAVAN**. **CLARE**. **GALWAY**. **ROSCOMMON**. **WESTMEATH**). *Giller and Twomey, 1993* as *Metalype* (**CORK:** R. Awbeg (R6804)). *Ashe, O'Connor and Murray, 1998* as *Metalype* (**IRELAND**). *Kelly-Quinn et al., 2003* as *Metalype* (**CLARE:** Caher R., near Holywell (M1706) and near Murroogh (M1508)). *O'Connor and Wise, 2004* as *Metalype* (**KERRY:** R. Laune (V8991), the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* as *Metalype* (**IRELAND:** 1 out of 207 river sites). *Kelly-Quinn et al., 2005* as *Metalype* (**IRELAND:** rivers). *Millane, 2006* as *Metalype* (**MAYO:** L. Carra (M1673), (M1777)). *Donohue et al., 2009* as *Metalype* (**IRELAND**). *Atalah et al., 2010* as *Metalype* (**IRELAND**). *de Eyto, 2011* as *Metalype* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* as *Metalype* (**CAVAN:** L. Sheelin

(N4385). **GALWAY:** L. Ardderry (L9945); L. Corrib (M2541). **MAYO:** L. Conn (G1810). **ROSCOMMON:** Cavetown L. (M8397). **WESTMEATH:** L. Derravaragh (N4066); L. Ennell (N4146); L. Lene (N5368)). *Kavanagh and Harrison, 2014* as *Metalype* (**CORK:** drainage ditch (W4881)). *Anon., 2015a* as *Metalype* (**KERRY:** Killarney National Park (V9787)).

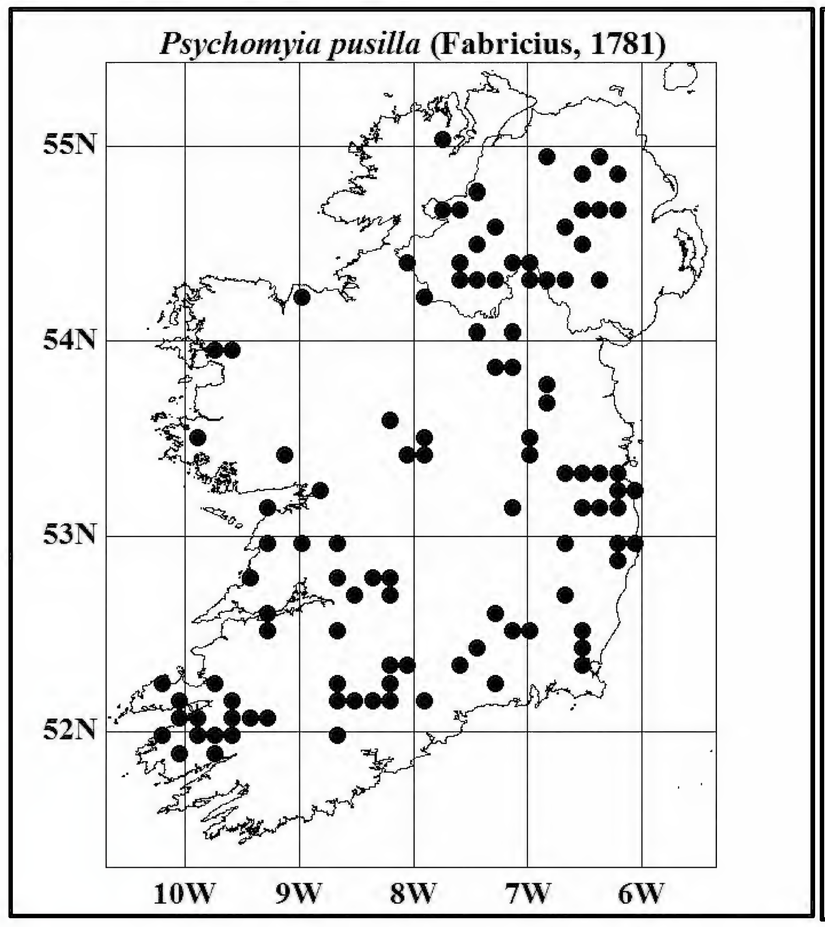
Unpublished records and voucher specimens

CAVAN: L. Sheelin (N4686), adults 30 August 1945, 26 August 1946, 10 August 1947, JRH, (N4786), ♂♀ 5 August 1973, JPOC (NMI), (N4685), Crover, IETS 1973/1974 2 adults, PG, (N4183), Kelly's Bay, 8 larvae 11 June 1975, KFW, det. JPOC. **CLARE: Caher R.** (M1508), Burren, ♂♂♀♀ 17 July (NMI) & 18♂♂ 31 July 1981, JPOC/MAOC, det. JPOC; **L. Derg** (R6878), ♂ 13 July 1973, JPOC, 3 larvae 17 June 1976 (NMI), (R6876), north of Killaloe, 5♂♂ 6 August 1986, CM/OSF (SINMNH), (R7071), Killaloe, adult June 1948, Farran, det. JRH. **CORK: R. Araglin** (R8703), larvae 1988-1990, NS. **GALWAY: L. Corrib** (M2531), Hurney's Point [near Moycullen], MVLTS 10♂♂30♀♀ 30 July & ♂ 16 September 2003, KGMB, det. JPOC, (M2531), Lower, ♂ 17 July 1980, BC, conf. JPOC; **Oughterard** (M1343), 9 adults 3-9 August 1926, MEM (BMNH). **MAYO: L. Carra** (M1677), Castleburke, ♂♂♀♀ 28 June 2001, JPOC (NMI). **MEATH: L. Sheelin** (N4482), Goreport Bay, IETS 1973/1974, adult, PG. **ROSCOMMON: L. Key** (G8205), larva 18 July 1972, AFF, det. JPOC; **L. Ree** (N0245), Yellow Island, 9 adults 22 August 1958, PHW (BMNH). **SLIGO: L. Gara South** (M6997), larva 1996/1997, JW. **TYRONE: Gargrim** (H1477), Crighshane, adult 18 November 2008, R. Anderson (CEDaR). **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂♂ 2 August 1888, [JJFXK], Morton Coll. (NMS), 6 adults 18 August 1894 (BMNH), adults 25A July & 5A August 1888, both JJFXK, RMCL Coll. (BMNH), 3♂♂♀ 31 August 1894, conf. JPOC (NMI); **L. Ennell** (N3847), 3 larvae sheltered rocky shore & 19 larvae exposed rocky shore, 15 May 1973, JPOC, (N4148), Belvidere House, ♂♂ 28 August 1990, JPOC/MAOC, det. JPOC, (N4046), Tudenham, 2♂♂ 9 July 1997, JPOC; **L. Lene** (N5067), larva 1996/1997, JW, ♂♂♀ 11 August 1998, JPOC (NMI); **L. Owel** (N4156), adult 1971, MK, IET ♀ 21 August 1973, PG, det. JPOC (NMI), 4 larvae July 1979, B. Hayes, det. JPOC (NMI), larvae 1996/1997, JW; **L. Ree** (N0547), 4 larvae 19 June 1976, JPOC (NMI), (N0245), Carby [Carberry] Island, 5 adults 18 August 1958, PHW det. DEK, ♂ conf. JPOC (BMNH); **R. Deel** (N5565), larvae September 1989, DAG/JML, det. JML.

53. *Psychomyia pusilla* (Fabricius, 1781)

Psychomia pusilla is widely distributed in Ireland. The gallery forming larvae mainly occur on stones, rocks etc. in rivers and streams (Fig. 131). However, there are some lake records including from Lough Neagh. They scrape algae off the solid surfaces. The larval and pupal stages may be parasitized by the larvae of the chironomid *Buchonomyia thienemani* Fittkau (Diptera) (Ashe, O'Connor and Murray,

2015). The species is widespread in much of Europe.
Flight period: May–September (20 May–15 September).
Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Laois, Leitrim, Limerick, Mayo, Meath, Monaghan, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (29/32). The species is known from 107 10km squares (107/1019).
FIGURES 129-130. Known Irish and European distributions of *Psychomyia pusilla*.



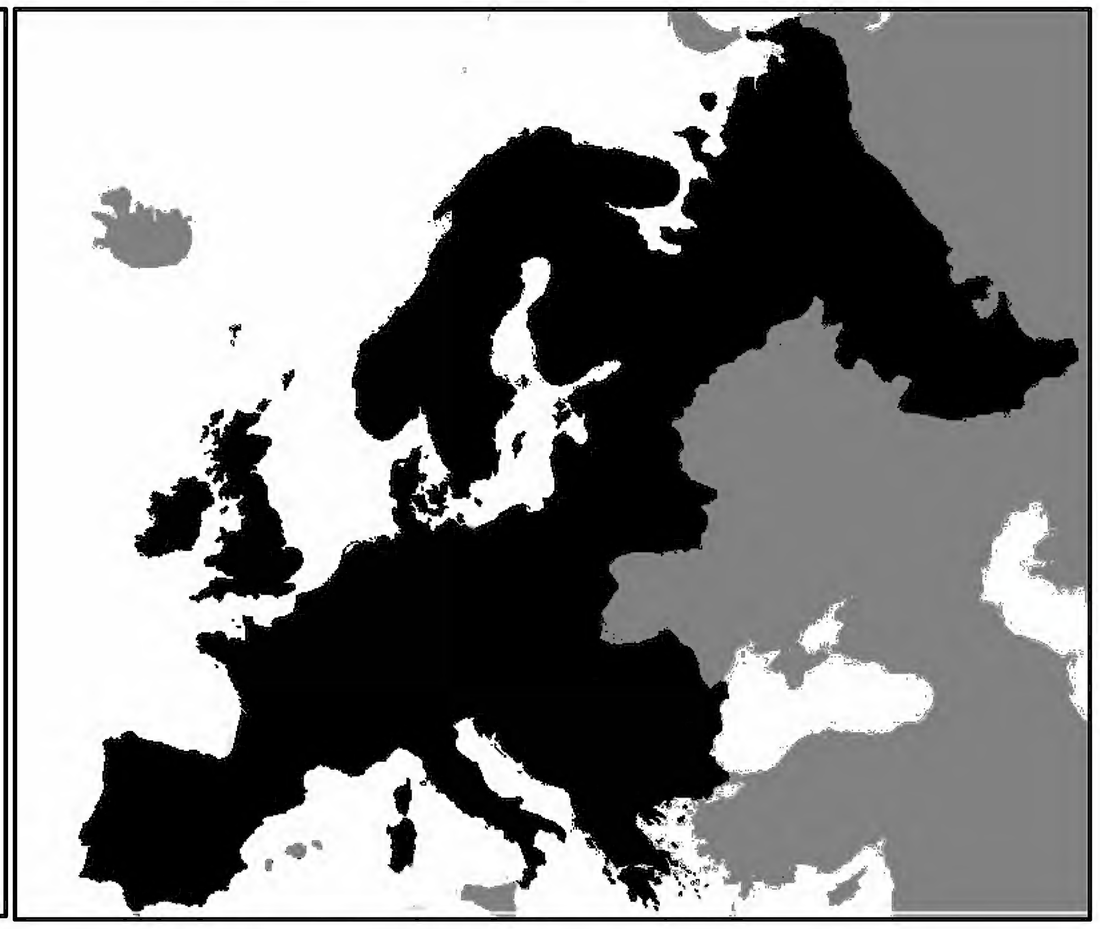
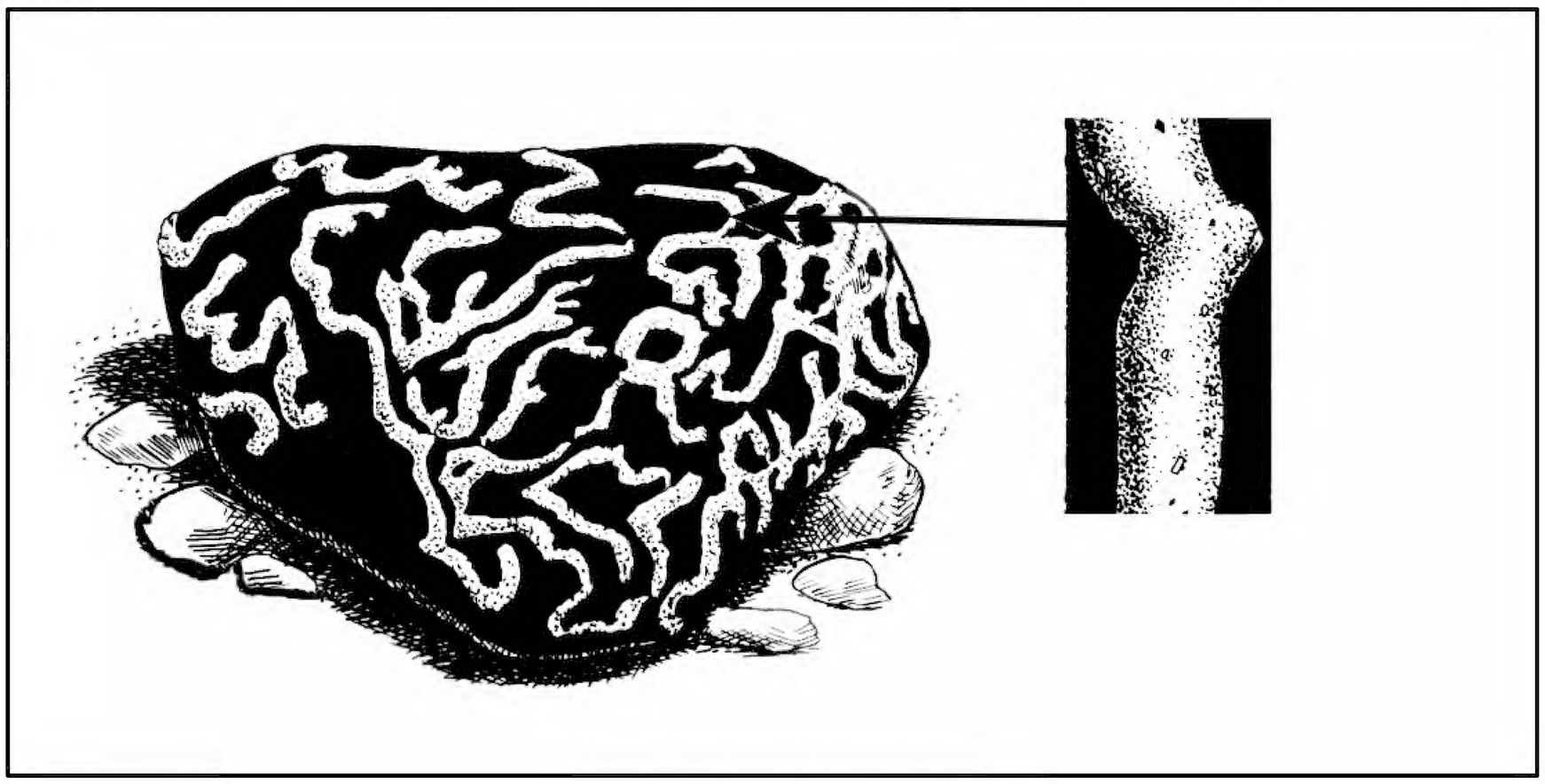


FIGURE 131. The larval galleries of *Psychomyia pusilla* (after Wiggins, 1977).



Published records

King, 1888a (**DUBLIN:** Lucan (O0335) [R. Liffey]. **KERRY:** Denough [Deenagh] (V9792) and Flesk (V9689) Rivers; Gap of Dunloe (V8787); Torc Cascade (V9684). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WESTMEATH:** Ballykeeron [Ballykeeran] (N0744); Coosan Point (N0446) [L. Ree]; Wineport (N0746) [L. Ree]. **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Morton,*

1892b (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* (**ARMAGH:** Coney Island in L. Neagh (H9364). **DONEGAL:** Cottian (C1318) [Leannan R.]; Kilmacrennan district (C1420) [Leannan R.]; Lennan Bridge (C1621) [Leannan R.]; etc. **DUBLIN:** Lucan (O0335) [R. Liffey]. **KERRY:** Deenagh (V9792) and Flesk (V9689) Rivers; Gap of Dunloe (V8787); Torc Cascade (V9684). **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WATERFORD:** Cappoquin (X0999); Lismore (X0498). **WESTMEATH:** Ballykeeran (N0744); Coosan (N0446) [L. Ree]; Wineport (N0746) [L. Ree]. **WEXFORD:** Edenvale (T0427) [R. Sow]. **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Beirne, 1939* (**CORK:** Ballyhooly (W7298) [R. Blackwater]. **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Frost, 1939* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Frost, 1942* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Toner and O'Connell, 1971* (**CORK:** Fermoy (R. Blackwater) (W8098); Mallow (R. Blackwater) (W5598); Mitchelstown (R. Funcheon) (R8113). **KERRY:** Rathmore (R. Blackwater) (W1693)). *Fahy, 1972a* (unsafe larval identification (Wallace, pers. comm.)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605). **DOWN:** (J1147) [corrected from J1247], (R6802) [corrected from R6902], (T2390)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919), (O2117), (O2217)). *Speight, 1977* as *Psychomia* (**WESTMEATH:** Coosan Lake [Coosan (N0446)]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480), (V7281), (V7192)). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *Murphy and Carter, 1984* (**ANTRIM:** L. Neagh (J1181), (J0485). **DERRY:** L. Neagh (H9485)). *O'Connor, 1987* (**IRELAND:** widespread). *Bracken, Norton and Phillips, 1991* (**TIPPERARY:** Kilmastulla R.). *Carter and Murphy, 1993* (**IRELAND:** L. Neagh). *Giller and Twomey, 1993* (**CORK:** R. Awbeg (R6804)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 15 out of 70 sampled sites). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (V9890), (V9689); R. Laune (V8991)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 41 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Donohue et al., 2009* (**IRELAND**). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**GALWAY:** L. Corrib (M2541)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Flesk (V9789); R. Inny (V5572)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Dunnstown Burn (D0409); Kellswater (J1698); R. Clady (C9603). **ARMAGH:** R. Callan (H8539). **DERRY (LONDONDERRY):** R. Agivey (C7912); R. Ballinderry (H9279). **FERMANAGH:** Cooneen Water (H4539); Foxhill Burn (H2752); Lisnabane Burn (H3744); R. Colebrooke (H3744); R. Roogagh (Glen R.) (G9451). **TYRONE:** Ballygawley R. (Ballygawley Water) (H6353); Ballynahatty Water (R. Owenreagh)

(H4367); Fury R. (H5551); R. Ballinderry (H8376); R. Camowen (H4673); R. Cloghfin (H5170); R. Derg (H1980), (H3184); R. Owenreagh (H3365); R. Strule (H4186)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R8959), (R8758), (R8456); R. Mulkear (R8667), (R8467), (R8168); R. Tar (R9117), (R9416), (R9617)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Arney R. (H2336); Lower L. Erne (H1758)). *Anon., 2015a* (**KERRY:** Killarney National Park (V9490)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** R. Sillees (H2341)).

Unpublished records and voucher specimens

ARMAGH: L. Neagh (H9364), Coney Island ♂♀ 22 July 1889, 2♂♂♀ 30 June 1891, WFJ, conf. JPOC (NMI). **CARLOW: R. Barrow** (S7237), St Mullins, LTS 19♀♀ 22 July 2015, JPOC/MAOC, det. JPOC, stream entering R. Barrow, 12♂♂4♀♀ 30 July 2015, JPOC; **R. Slaney** (S9161), Clonegal, adult 31 August 1946, JRH; **St Mullins** (S7237), stream entering R. Barrow, ♀ 5 July 2014, JPOC/MAOC, det. JPOC. **CAVAN: L. Ramor** (N6087), outlet of, 2♂♂ 10 August 1972 & ♂ 2 August 1973, JPOC, ♂ 1 August 1986, CM/OSF (SINMNH); **L. Sheelin** (N4686), Crover, ♂ 6 August 1990, JPOC; **Owenmore R.** (H0626), ♀ 3 August 1973, JPOC; **R. Erne** (H3712), 3♂♂2♀♀ 4 August 1973, JPOC; **R. Laragh** (H5210), LT 8♂♂193♀♀ 2-3 August 1973, JPOC. **CLARE: Annageeragh R.** (R0371), larva & 3♂♂3♀♀ 9 July 1973, JPOC; **Caher R.** (M1608), LT ♀ 30-31 August 1973, JPOC; **Cullenagh R.** (R1388), LT 4♂♂2♀♀ 9-10 July 1973, JPOC; **Denlagh R.** (R1191), ♂ 30 August 1973, JPOC; **Gourna R.** (R5166), 2♂♂2♀♀ 12 July 1973, JPOC; **Moyree R.** (R3689), tributary stream, 4 larvae 1 July 1973, JPOC; **R. Bleach** (R5795), 18♂♂ 13 July 1973, JPOC; **R. Cloon** (R1656), ♂ 29 August 1973, JPOC (NMI); **R. Ennistymon** (Inagh R.) (R1288), LT 2♀♀ 15 July 1981, JPOC. **CORK: Ballyhooly** (W7298) [R. Blackwater], adult 10 August, adult 12 August & 2 adults 9 August 1938, BPB (BMNH); **Buttevant** (R5408) [R. Awbeg], MVLT 7♂♂18♀♀ 17 August 1995, KGMB; **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.); **R. Blackwater** (W5397), near Mallow, 24♂♂16♀♀ 4 August 1986, CM/OSF (SINMNH); **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI). **DONEGAL: Kilmacrenan** (C1420), adults July and August 1891, JJFXK (TMM) (per IDW). **DUBLIN: R. Dodder** (O1730), Clonskea [Clonskeagh], adult 9 September 1946, JRH; **R. Liffey** (O0335), Weir, Lucan, ♂ 31 July 1986, JPOC, (O0635), weir at Wren's Nest, 2♂♂2♀♀ 12 August 2014, JPOC, (O0735), east of Lucan, 3♂♂♀ 31 July 1986, CM/OSF (SINMNH), (O1034), millrace, Chapelizod, adult 19 August 1946, JRH, (O0735), Strawberry Beds, 2♂♂♀ 12 August 2014, JPOC. **GALWAY: Dawros R.** (L7357), larvae May 1991, SV, conf. JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 12 March 1984, PB, det. JPOC. **KERRY: Glenahoo R.** (Q5410), 5♂♂ 7 July 1973, JPOC; **Iveragh Peninsula** (V7184), near west Glencar, ♂ 18 August 1981, HM, det. H. Malicky; **Killarney**, ♀ August (NMS), 2♀♀ 27 June, ♂ 18 July & ♂ 20 July, ♀ 3 August 1887 (NMI); **Owenschull R.** (Q5901), 10♂♂4♀♀ 7 July 1973, JPOC; **R. Behy** (V6589), 4♂♂ 6 July 1973, JPOC; **R. Blackwater**

(V7970), 4♂♂ 4 July 1973, JPOC, (V7972), Derrendarragh, 6♂♂2♀♀ 4 August 1986, CM/OSF (SINMNH); **R. Caragh** (V7184), ♂3♀♀ 3 July 1973, (V7192), below L. Caragh, larva 4 August 1975 (NMI), all JPOC; **R. Cummeragh** (V5872), ♀ 26 August 1973, JPOC; **R. Ferta** (V5282), 94♂♂ 6 July 1973, JPOC; **R. Flesk** (V9789), ♂♀ 5 September 1972, (V9689), 4♂♂♀ 25 June 1973, JPOC, (V9890), 3 larvae July 1972, EJW, one det JPOC (NMI); **R. Galey** (R1538), 6♂♂♀ 8 July 1973, JPOC; **R. Laune** (V8991), larva July 1972, EJW (NMI); **R. Maine** (Q8905), 10♂♂ 7 July & ♂♀ 27 August 1973, stream entering, 2♂♂♀♀ 7 July 1973, JPOC. **KILDARE: R. Liffey** (N8827), Clane, ♂♂♀♀ 11 July 1972, JPOC (NMI). **KILKENNY: R. Nore** (S5055), Kilkenny, ♂♂♀♀ 29 July 1987, BMOH, det. JPOC, (S6337), Inistioge, 2♂♂2♀♀ 21 July 2015, JPOC/MAOC, det. JPOC. **LAOIS: R. Barrow** (N5412), near Portarlington, adult 26 August 1948, JRH. **LEITRIM: L. Melvin** (G9249), ♂ 7 August 1992, JPOC. **LIMERICK: R. Maigue** (R5140), Croom, adult 2 September 1948, JRH; **R. Shannon** (R6663), Castleconnell, LT ♀♀ 12-13 July 1973, JPOC. **MAYO: Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT 2♂♂♀ 30 May-20 June 1997, MCDS, det. JPOC. **MEATH: Kells Blackwater R.** (N8172), 3 larvae 8 July 1972, AFF, det. JPOC, (N7377), 3♂♂♀ 1 August 1986, JPOC; **R. Blackwater** (N7245), Longwood, adult 14 August 1947, JRH; **R. Boyne** (N7149), larvae June 1989, DAG/JML, det. JML. **MONAGHAN: Emyvale** (H6843), ♂♂♀ 20-30 July [1885-6], Morton Coll. (NMS); **Glasslough** (H7241), ♂ August 1892, Morton Coll. (NMS). **ROSCOMMON: R. Suck** (M8257), above Athleague, 8♂♂7♀♀ 15 August 2001, JPOC. **SLIGO: R. Easky** (G4032), near Patch, ♀ 24 August 1992, JPOC. **TIPPERARY: Kilmastulla R.** (R9173), larvae/adults 1976-1977, MAOC; **R. Lingaun** (S4031), Slate Quarries, ♀ 21 August 2000, JPOC. **TYRONE: Cookstown** (H8176), ♂ 15 September 1937, BPB, conf. JPOC (BMNH). **WATERFORD: Glasha R.** (S3022), 2♂♂ 8 July 1989, JPOC/MAOC, det. JPOC, ♀ 18 July 1989, JPOC; **Portlaw Estate** (S4415), river, ♂ 16 July 1987, JPOC; **R. Blackwater** (X0498), Lismore, ♂♂♀♀ 20 May 1997, JPOC. **WEXFORD: R. Boro** (S9636), Soldiers Hole, 9♂♂9♀♀ 23 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9739), Enniscorthy, 9♂♂9♀♀ 27 July 2015, (S9738), 5♂♂3♀♀ 28 July 2015, all JPOC/MAOC, det. JPOC, (T0123), estuary, 13 larvae 7 June 1972, AFF, det. JPOC; R. Urrin (S9738), Enniscorthy, 3♂♂3♀♀ 28 July 2015, JPOC/MAOC, det. JPOC. **WICKLOW: Avoca R.** (T1982), 4♂♂2♀♀ 21 July 1973, JPOC; **Knocksink Woods** (O2117), MT by flush beside woodland, 2♂♂♀ 3-6 July 1995, CR, det. JPOC; **Little Bray R.** (O2518), Little Bray, 3♂♂2♀♀ 31 July 1986, CM/OSF (SINMNH); **Lower L. Bray** (O1416), 2♂♂♀ 14 August 1972, outlet stream, 71♂♂35♀♀ 22 July 1972, ♂♀ 31 July 1986, JPOC; **R. Bray** (O2518), ♂♂♀♀ 22 July 1972 (NMI), 17♂♂9♀♀ 20 July 1973, JPOC; **R. Dargle** (O2216), 5♂♂6♀♀ 16 August 1972, JPOC; **R. Liffey** (O0115), Kilbride [Road], adult 16 June 1945, JRH, (O0216), Ballyward, adult 2 July 1946, JRH; **R. Slaney** (S8892), LT 26♂♂352♀♀ 24-25 July 1973, JPOC; **Vartry R.** (T2796), ♂ 20 July 1973, JPOC (NMI).

[*Tinodes assimilis* McLachlan, 1865

Hickin (1952) described the larvae of *Tinodes assimilis* based on material collected in the Isle of Man. In this paper, he reported *T. assimilis* from Ireland as a footnote. The record is based on a number of *Tinodes* larvae collected by Hickin on about four square feet of wet rock surrounded by pavements and brick walls in the centre of Tramore, County Waterford. No adults were reared and at the time the larvae of *T. maclachlani* were unknown. Peter Barnard and the author examined Hickin's larvae in the Natural History Museum, London (BMNH). The specimens had dried out but on rehydration, they did appear to be the larvae of *T. assimilis* using Edington and Hildrew (1981). However, the Tramore record requires confirmation since Wallace (1991) noted that the above larval key on occasions incorrectly identifies *T. maclachlani* as *T. assimilis*. Adults have never been found in Ireland. Instead, *T. maclachlani* is very common in suitable habitats. The author has taken *T. assimilis* larvae and adults in the Isle of Man where it is widespread and easily collected. It is unlikely therefore that the species has been overlooked in Ireland. Fahy (1972a) reported three larvae of *T. assimilis* from near Collon, County Louth but identified the material using Hickin (1967). As *T. maclachlani* is not included in that work, the record is unacceptable.

Published records

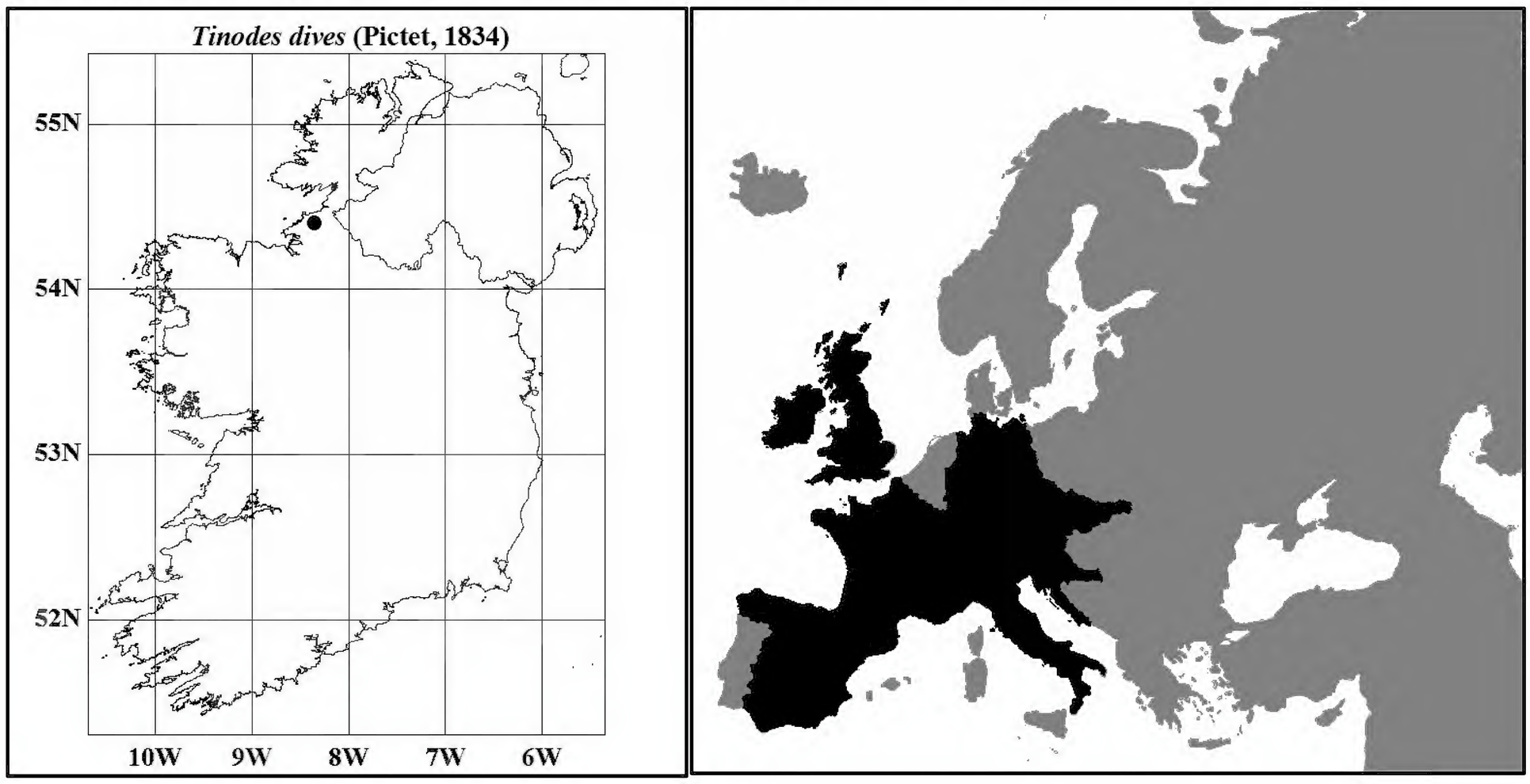
Hickin, 1952 (unsafe larval identification). *Baynes, 1953* (unsafe larval identification). *Hickin, 1967* (unsafe larval identification). *Fahy, 1972a* (unsafe larva identification (Wallace, pers. comm.)). *O'Connor and Nelson, 2012* (listed as doubtful).

Unpublished records and voucher specimens

WATERFORD: Tramore, larvae 12 June 1952, N. E. Hickin (BMNH).]

54. *Tinodes dives* (Pictet, 1834)

FIGURES 132-133. Known Irish and European distributions of *Tinodes dives*.



Tinodes dives is a rare Irish species so far only definitely known from a calcareous stream at an altitude of *circa* 245m on Ben Bulben in County Sligo. A male was swept from a lush bank mainly of grasses with some *Juncus* beside the swift-flowing stream which had a stone and gravel bed. The site was some 90m from the base of a waterfall, over 90m high, which arose from a spring at the base of limestone cliffs. The waterfall, running over stepped limestone, provided hygropetric zones where seepages flowed in thin films over the vertical rock faces (O'Connor and Good, 1984). These uplands are formed of Carboniferous limestone, capped in places by shales. The area is one of the best in the country for alpine plants, in terms of species richness, abundance and indeed, some of the alpine plants found here occur nowhere else in Ireland. The author noted adults of *T. dives* flying in their thousands during a visit to calcareous streams in the high French Alps and the species appears to be an Alpine relict in Ireland from the last glaciation. Little and Free (2013) listed several larval records of *Tinodes dives*. These require confirmation as the specimens were found in an unusual habitat for the species and because they may be misidentifications of *T. maculicornis*. Edington and Alderson (1981, 1995) did not include the variation in labrum pigmentation which is known to occur in *T. maculicornis* (O'Connor and Wise, 1980). Callanan, Baars and Kelly-Quinn (2014) recorded larvae from headwater streams in County Tipperary, a more likely habitat. In Britain, Wallace (1991) has recorded the species from headwater streams. The author has asked the senior author *via* a co-author Dr Kelly-Quinn on 16 December 2014 to see the voucher material but none has been made available. In the absence of adult and voucher material, these records also need confirmation. The gallery forming larvae occur on stones, rocks etc. where they scrape algae. The species has a limited European distribution, being mainly central and southern.

Flight period: July (30 July). Barnard and Ross (2012) give the British flight period as May–August.

County and 10km squares: Sligo. The species is only known from one 10km square (1/1019).

Published records

O'Connor and Good, 1984 (**SLIGO:** Ben Bulben, stream (G7346)). *O'Connor, 1987* (**SLIGO:** Ben Bulben [G7346], stream). *Edington and Hildrew, 1995* (**IRELAND**)). *O'Connor, 1997* (**SLIGO:** Ben Bulben (G7346)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**SLIGO:** Ben Bulben (G7346)). *Bradley and Kelly-Quinn, 2005* (IRELAND: 1 out of 207 river sites [requires confirmation]). *Kelly-Quinn et al., 2005* (IRELAND: river record requiring confirmation). *de Eyto, 2011* (MAYO: Burrishoole and Owengrave catchments, larval identification requiring confirmation as they may be misidentifications of *T. maculicornis* which were also taken by the author in the area)). *O'Connor and Nelson, 2012* (**SLIGO**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (larval identifications from the littoral zone of lakes and since this would be an unusual

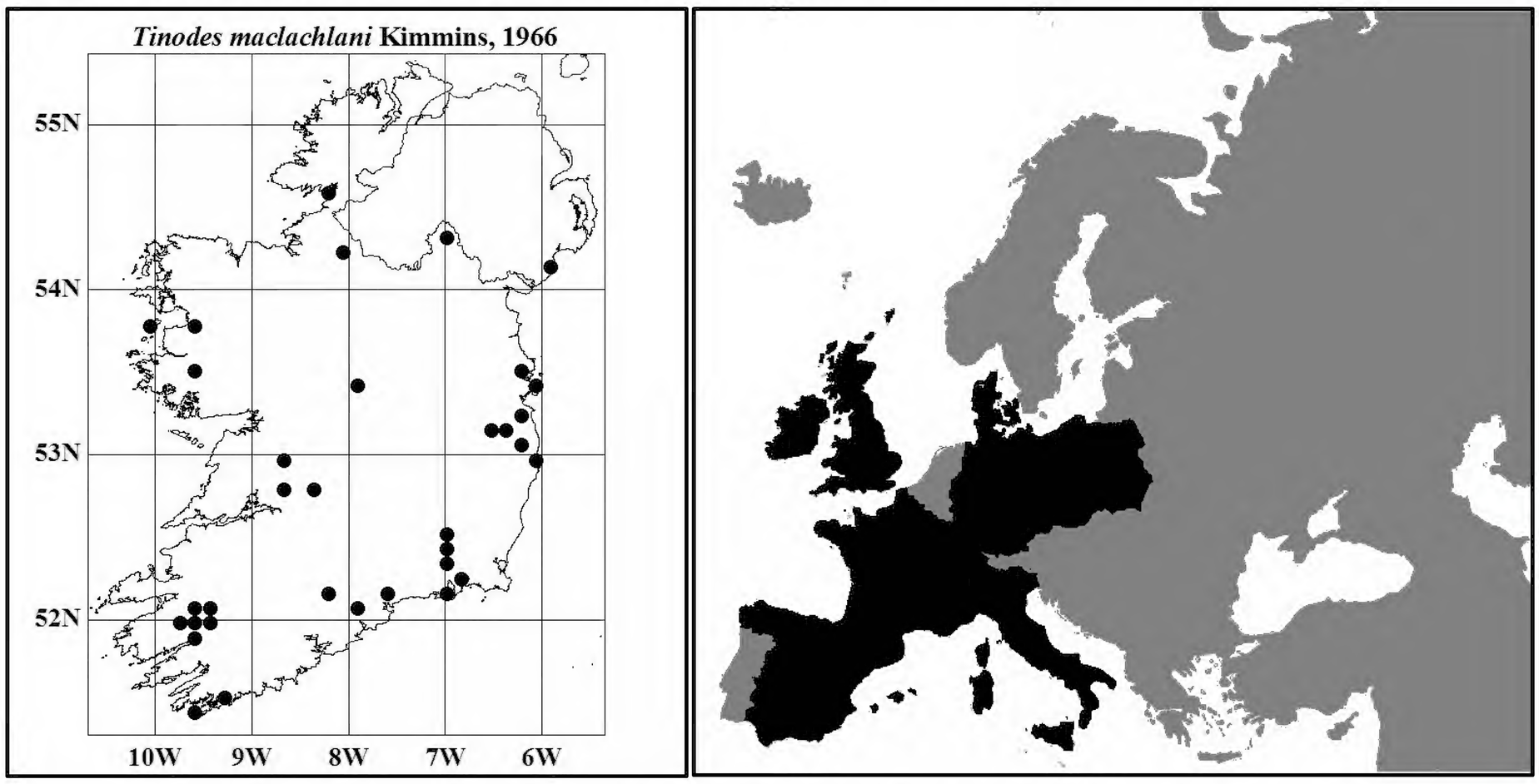
habitat for the species, adult confirmation is required. They may be misidentifications of *T. maculicornis* which is known to occur in Lough Corrib, County Galway and Lough Derravaragh, County Westmeath, two of the lakes with reported records of *T. dives*). *Callanan, Baars and Kelly-Quinn, 2014* (TIPPERARY: R. Bilboa; R. Mulkear; R. Tar, all larval identifications which require confirmation with adults as instead they may be misidentifications of *T. maculicornis*.).

Unpublished records and voucher specimens

SLIGO: Clogh Valley (G7346), ♂ 30 July 1983, JAG, det. JPOC (NMI).

55. *Tinodes maclachlani* Kimmins, 1966

FIGURES 134-135. Known Irish and European distributions of *Tinodes maclachlani*.



Tinodes maclachlani is widely distributed in Ireland. The gallery building larvae occur on trickling rock faces by waterfalls and on cliffs including coastal ones. They are also found in small streams. They scrape algae. The species has a limited European distribution and is not known from much of the north and south.

Flight period: May–August (24 May–31 August).

Counties and 10km squares: Carlow, Cavan, Clare, Cork, Donegal, Down, Dublin, Galway, Kerry, Mayo, Monaghan, Tipperary, Waterford, Westmeath, Wexford, Wicklow (16/32). The species is known from thirty-four 10km squares (34/1019).

Published records

King, 1888a as *Tinodes aureola* (**DUBLIN:** Howth (O2838). **GALWAY:** Ma'am Burn (L9653). **KERRY:** Flesk R. (V9689); Gap of Dunloe (V8787); Spa Well (W0092); The Glen in Deer Park (V9792); Torc Cascade (V9684). **MAYO:** Prospect Laogh (L9581). **WESTMEATH:** Shannon (N0341)). *Halbert, 1908* as *Tinodes aureola* (**DUBLIN:** Howth (O2838)). *King and Halbert, 1910* as *Tinodes aureola* (**DUBLIN:** Howth (O2838). **GALWAY:** Maam R. (L9653). **KERRY:** Flesk R. (V9689); Gap of Dunloe (V8787); Spa Well (W0092); The Glen in Deer Park (V9792); Torc (V9684). **MAYO:** Prospect L. (L9581). **MONAGHAN:** Emyvale

(H6843). **WESTMEATH:** Shannon (N0341)). *Halbert, 1912* as *Tinodes aureola* (**MAYO:** Clare Island (L6985); Westport (L9984)). *Frost, 1942* as *Tinodes aureola* (**WICKLOW:** Ballysmuttan (O0514) [R. Liffey], larvae only). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881)). *O'Connor, 1987* (**IRELAND:** widespread). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Hancock, 2014* (**DOWN:** Bloody Bridge R. (J3826)).

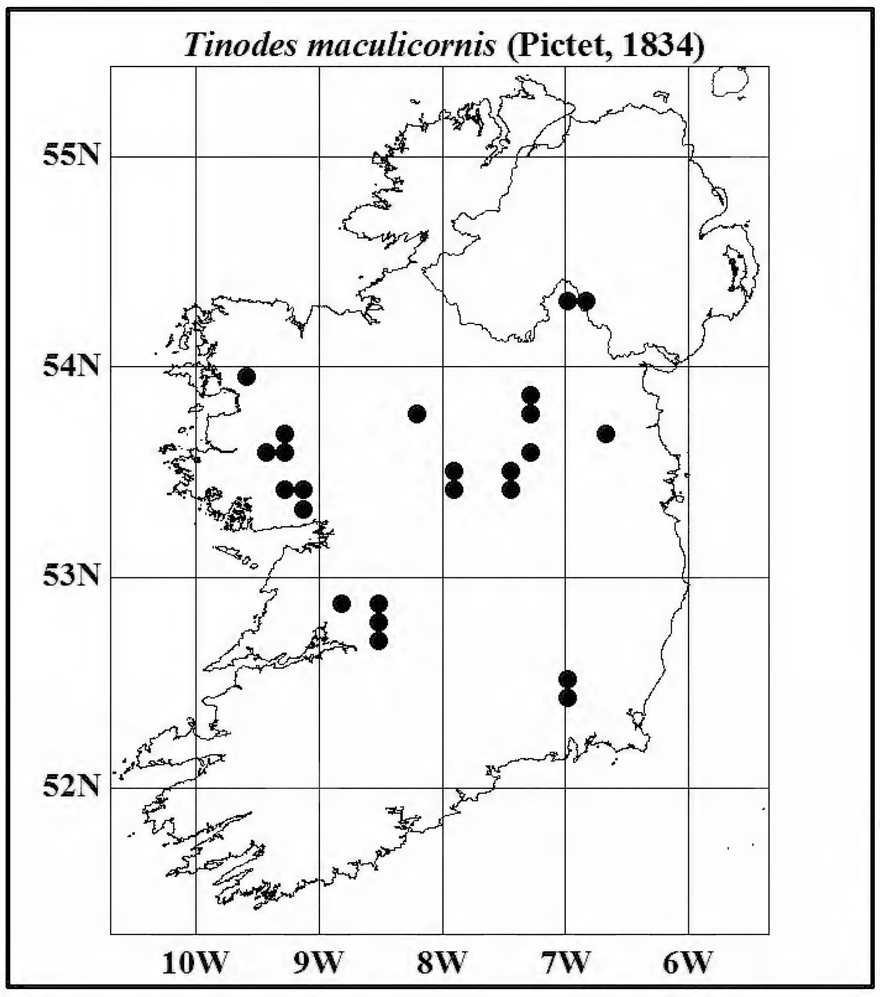
Unpublished records and voucher specimens

CARLOW: St Mullins (S7237), small river entering R. Barrow, 3♂♂ 1 July 1991, 3♂♂ 15 August 1994, ♂ 5 July 2014, JPOC/MAOC, det. JPOC, ♂4♀♀ 30 July 2015, JPOC, (S7238), streamlet entering R. Barrow under pathway, ♂ 22 July 2015, JPOC/MAOC, det. JPOC, (S7439), stream, ♂♀ 24 August 2000, JPOC. **CAVAN: stream/waterfall** (H0127), ♂ 3 August 1973, JPOC. **CLARE: R. Bleach** (R5795), ♂ 13 July 1973, JPOC; **R. Gourna** (R5166), ♂ 12 July 1973, JPOC. **CORK: Clear Island** (V9520), South Harbour, rock face, ♂ 2 June 1985, KGMB, det. JPOC (NMI); **L. Hyne** (W0927), wet seepage, ♂♂ 12 July 1999, PA, det. JPOC; **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.). **DONEGAL: Coolmore** (G8566), stream, larvae & 2♂♂♀ 26 June 1981, JPOC (NMI). **DOWN: Bloody Bridge R.** (J3826), ♂ 2 July 1912, JJFXK, det. JPOC (HMAG). **DUBLIN: coast between Skerries/Loughshinny** (O2151), ♂ 25 June 1983, KGMB, det JPOC (NMI); **Howth** (O2838), ♂ 31 August 1888, [JJFXJ], conf. JPOC (HMAG), (O3038), ♂ 24 June 1984, KGMB, det. JPOC (NMI). **KERRY: Galway's Bridge** (V9180), stream, ♂ 3 July 1973, JPOC (NMI); **Gap of Dunloe** (V8786), streams, ♂♀ 10 July 1986, JPOC; **Kenmare Road** (V9484), opposite Muckross Lake, dripping rocks, larva 31 May 1995, JPOC; **Killarney**, ♂ 27 June 1887, JJFXK, conf. JPOC (NMI); **R. Cloghereen** (V9786), near Blue Pool, 8 larvae 28 May 1995, JPOC; **Roughty R.** (V9371), 2♂♂ 4 July 1973, JPOC. **MAYO: Clare Island** (L6985), adult July 1910, CJM, det. JRAG (IM) (per IDW). **MONAGHAN: Emyvale** (H6843), ♂♂♀♀ 20-30 July [1885-6], Morton Coll., conf. JPOC (NMS). **TIPPERARY: Kilmastulla R.** (R7269), larvae/adults, 1976-1977, MAOC. **WATERFORD: Dunmore East** (S6800), The Woods, stream, larvae 11 April 1996, small beach cove (rocky inlet with water seeping down the cliffs), larvae 12 April 1996 (NMI), seepages at cliff in harbour, 6♂♂♀ 11 June 1991, JPOC; **Killahaly Wood** (X0895), Blackwater Valley, ♂ 18 June 1986, KGMB, det. JPOC (NMI); **Portally Cove** (X6799), stream, ♂♀ 24 May 1997, JPOC; **streams** (S3202), near the Vee, 3♂♂3♀♀ 20 July 1987, JPOC. **WEXFORD: J. F. Kennedy Park** (S7219), streams, ♂ 7 July 2014, JPOC; **near Island Bridge, New Ross** (S7230), streams in ornamental gardens, ♂ 29 June 2014, JPOC/MAOC, det. JPOC; **Tintern Abbey** (S7910), streams, 2♂♂ 1 July 2014, JPOC/MAOC, det.

JPOC. **WICKLOW: Devil's Glen** (T2499), ♀ 7 August 1990, JPOC/MAOC, det. JPOC; **Glencullen R.** (O1919), ♂ 22 July 1973, JPOC; **Sroughan** (N9911), waterfall and stream, ♂♂♀ 22 July 1973, JPOC (NMI); **Vartry R.** (T2797), ♂ 20 July 1973, JPOC (NMI).

56. *Tinodes maculicornis* (Pictet, 1834)

FIGURES 136-137. Known Irish and European distributions of *Tinodes maculicornis*.



Tinodes maculicornis is found in central and south-east Ireland where it occurs in calcareous lakes, rivers and streams. The published record from County Donegal is a misidentification of *T. waeneri*. The bluish gallery building larvae occur on stones and rocks where they scrape algae. In lakes, the galleries are often embedded in calcite. Males have been taken on a cruise boat in the south-east (O'Connor, Bond and O'Connor, 2014) and this behaviour may aid dispersal in the area. The species is absent from Britain and has a limited south-western European distribution.

Flight period: July–September (1 July–16 September).

Counties and 10km squares: Carlow, Cavan, Clare, Galway, Kilkenny, Limerick, Mayo, Meath, Monaghan, Roscommon, Westmeath, Wexford (12/32). The species is known from twenty-four 10km squares (24/1019).

Published records

Morton, 1887a (**MONAGHAN:** Glasslough (H7241)). *King, 1888a* (**MONAGHAN:** Glaslough (H7241). **WESTMEATH:** Coosan (N0446) [L. Ree]; Glasson (N0947); Twy [Breensford] R. (N0943); Wineport (N0746) [L. Ree]). *King, 1889c* (**WESTMEATH:** neighbourhood of Athlone (N0341); Glasson (N0947), L. Ree; Twy [Breensford] R. (N0943)). *Morton, 1892b* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* (DONEGAL: L. Reelan (C1327) (misidentification. The specimen is a *Tinodes waeneri*). **MONAGHAN:** Glaslough

(H7241). **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Glassan [Glasson] (N0947); Wineport (N0746) [L. Ree]; Twy [Breensford] R. (N0943)). *Praeger, 1950* (DONEGAL (misidentification). **MONAGHAN**. **WESTMEATH**). *Fisher, 1977* (**IRELAND**). *Speight, 1977* (**WESTMEATH:** Coosan Lake [Coosan Point (N0446)]). *O'Connor and Norton, 1978* (**WESTMEATH:** Coosan Point (N0446) (L. Ree)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1978a* (**IRELAND:** common in localities where suitable habitats exist); *O'Connor and Wise, 1980* (**CAVAN:** L. Sheelin (N4686). **CLARE:** L. Derg (R6878); O'Brien's Big Lake (R4182); R. Shannon (R7073). **MONAGHAN:** Glaslough (H7241). **WESTMEATH:** L. Ree (N0446)). *Edington and Hildrew, 1981* (**IRELAND**). *O'Connor, 1987* (**CAVAN**. **CLARE**. DONEGAL (misidentification). **MONAGHAN**. **WESTMEATH**). *Edington and Hildrew, 1995* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 3 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1673)). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *de Eyto, 2011* as *Tinodes muculicornis* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and O'Connor, 2013* ([DONEGAL]. **CARLOW:** St Mullins (S7238). **CLARE:** L. Derg (R6878). **KILKENNY:** R. Nore (S6535). **WESTMEATH:** Twy R. (N0943)). *Little and Free, 2013* (**CAVAN:** Coosan L. (N0544); Killinure [L. Ree] (N0745); L. Sheelin (N4385). **ROSCOMMON:** Annaghmore L. (M9083)). *O'Connor, Bond and O'Connor, 2014* (**CARLOW:** small river near St Mullins (S7238). **WEXFORD:** R. Barrow (S7330)).

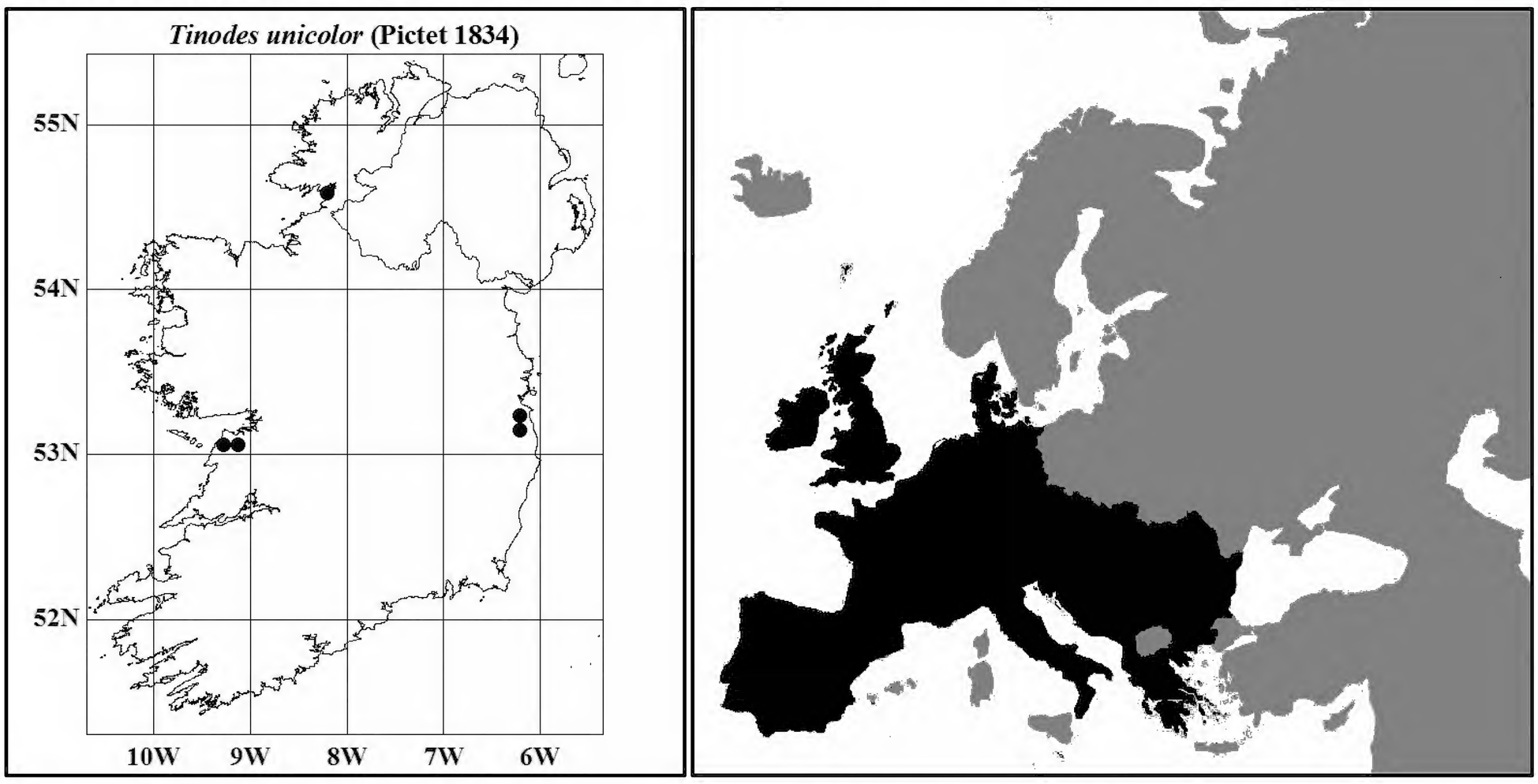
Unpublished records and voucher specimens

CARLOW: St Mullins (S7237), small river entering R. Barrow, ♂ 1 July 1991, JPOC/MAOC, det. JPOC, (S7238), ♂ 9 August 1994, JPOC, stream, ♂ 5 July 2014, JPOC/MAOC, det. JPOC (NMI). **CAVAN: L. Sheelin**, adult 10 August 1947, JRH, (N4786), ♂ 5 August 1973, (N4686), larvae 17 June 1977, 2♂♂ reared emerging August 1977 (NMI), (N4686), Woodlawn, Crover, numerous ♂♂♀♀ 6 August 1990 (NMI), all JPOC. **CLARE: L. Derg** (R6878), Tinarana Bay, 2 larvae 18 July 1972, LT 11♂85♀♀ 2-3 September 1973, larvae 17 June 1976, JPOC (NMI), larva 30 July 1974, EJW, ♀ reared by JPOC, emerged 26 August 1974, det. JPOC (NMI), (R7071), Killaloe, adult 1948, Farran, det. JRH; **O'Brien's Big Lake** (R4182), LT ♂ 1-2 September 1973, JPOC; **R. Shannon** (R6767), O'Brien's Bridge, ♂2♀♀ 3 September 1973, JPOC. **GALWAY: L. Corrib** (M2531), Hurney's Point [near Moycullen]), MVLT ♂ 16 September 2003, KGMB, det. JPOC, (M2341), Middle, ♂♀ 7 August 1980, BC, conf. JPOC (NMI); **L. Mask** (M0957), Kilbeg Lower, LT ♂ 16 August 2014, MG; **Rosscahill Woods** (M1837), edge of Ross Lake, ♂ 11 July 2012, MG. **KILKENNY: R. Nore** (S6535), ♂ 13 July 2013, specimen flew on to a cruise boat, JPOC (NMI). **LIMERICK: R. Shannon** (R6663), Castleconnell, LT ♂ 12-13 July

1973, JPOC. **MAYO: L. Mask** (M1259), (M1465), adults July-August 1964, MK. **MEATH: R. Boyne** (N8768), Navan, adult 3 August 1945, JRH. **MONAGHAN: Emyvale** (H6843), (NMS); **Glaslough** (H7241), adult August 1892, adult 20-30 July [1885-6], Morton Coll. (NMS), 5 adults August 1892, [KJM], RMCL Coll. (BMNH), ♂2♀♀ 12 August 1973, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 2 August 1888, JJFXK, Morton Coll. (NMS), 2 adults 9 August 1888, [JJFXK] (BMNH); **L. Derravaragh** (N4662), 4♂♂ 18 August 1978, JPOC; **L. Ennell** (N3744), 3 larvae 27 June 1979, M. McGarrigle, det. JPOC, (N4148), Belvidere House, 4♂♂ 28 August 1990, JPOC/MAOC, det. JPOC, (N4046), Tudenham, ♂ 9 July 1997, JPOC; **L. Ree** (N0446), Coosan Point, larvae 6 June 1977, JPOC (NMI).

57. *Tinodes unicolor* (Pictet, 1834)

FIGURES 138-139. Known Irish and European distributions of *Tinodes unicolor*.



Tinodes unicolor is a local Irish species but can be present in large numbers as in the Rathborney River of County Clare which is situated in the Burren. This river can almost disappear during the summer months due to the porous limestone rock. Little and Free (2013) list several larval records of *Tinodes unicolor* but these require confirmation as the specimens occur in an unusual habitat for the species and because they may be misidentifications of *T. maculicornis* which is abundant in Lough Ennell, County Westmeath, one of the lakes recorded for *T. unicolor*. Edington and Alderson (1981, 1995) shortened the identification couplets in O'Connor and Wise (1980) and did not include the variation in labral pigmentation which is known to occur in *T. maculicornis*. The keys provided by Edington and Alderson (*op. cit.*) may not work therefore for separating the two species for Irish specimens. The gallery building larvae occur in highly calcareous small streams which are depositing travertine and where they scape algae. The species has a southern and western European distribution.

Flight period: July (3/6 July–16 July). There are only a small number of Irish adult records. Barnard and Ross (2012) give the British flight period as June–September.

Counties and 10km squares: Clare, Donegal, Wicklow (3/32). The species is known from five 10km squares (5/1019).

Published records

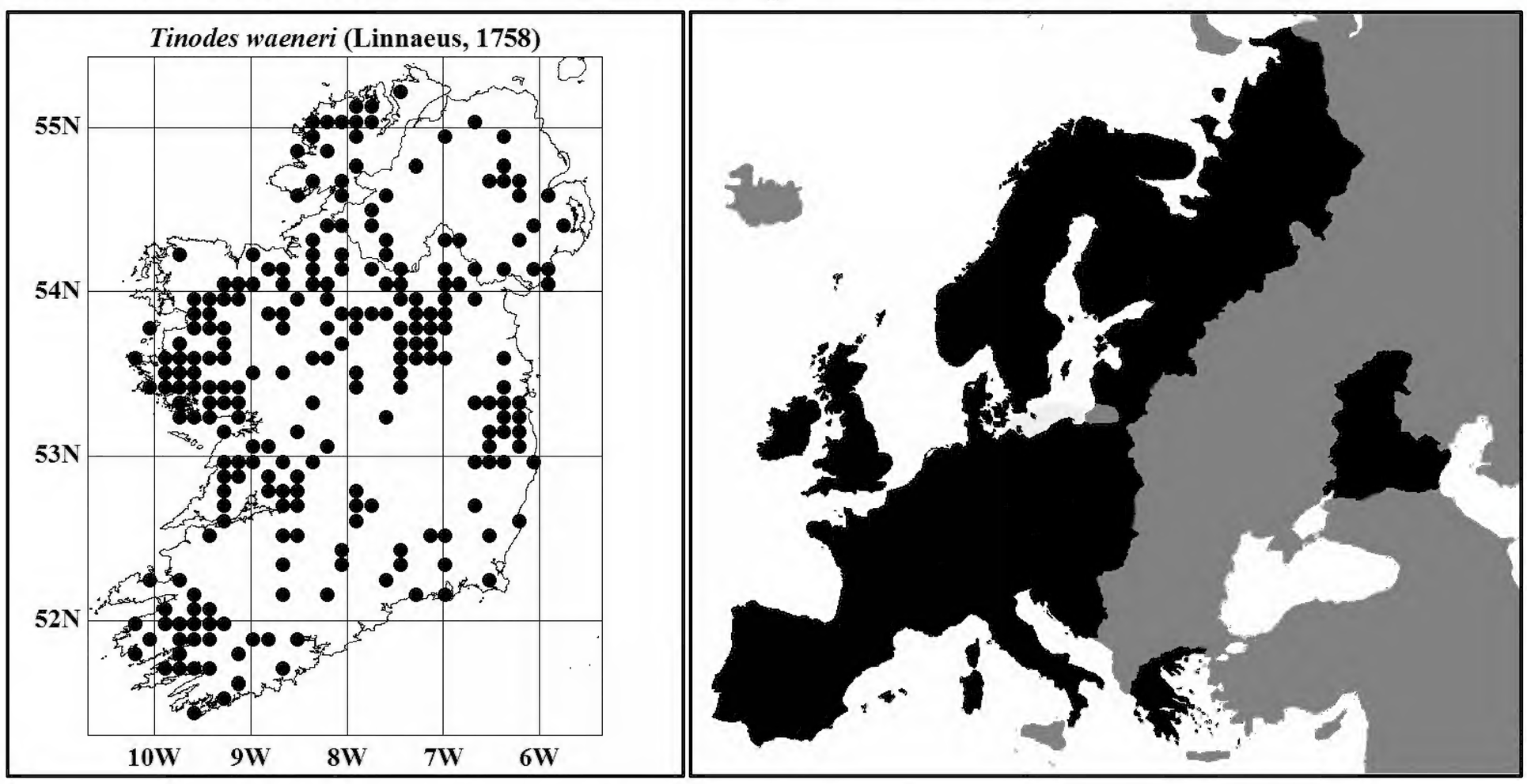
Johnson, 1894 (**DONEGAL:** Coolmore (G8566)). *King and Halbert, 1910* (**DONEGAL:** Coolmore (G8566)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and O'Connor, 1982* (**CLARE:** Rathborney R. (M1905), (M2004). **DONEGAL:** Coolmore [G8566]). *O'Connor, 1987* (**CLARE**. **DONEGAL**. **WICKLOW**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (larval lake records which require confirmation).

Unpublished records and voucher specimens

CLARE: Rathborney R. (M1905), (M2004), larvae & ♂♂♀♀ 16 July 1981, JPOC/MAOC, det. JPOC (NMI). **DONEGAL: Coolmore** (G8566), ♂ confirmed JPOC, [WFJ] (NMI). **WICKLOW: Knocksink Woods** (O2118), 5 larvae 10 May 1984, ♂ reared 10 July 1984, JPOC (NMI); (O2117), MT by flush beside woodland, ♀ 3-6 July 1995, CR, det. JPOC.

58. *Tinodes waeneri* (Linnaeus, 1758)

FIGURES 140-141. Known Irish and European distributions of *Tinodes waeneri*.



Malicky (2005) gives three subspecies but only ssp. *waeneri* occurs in Ireland. *Tinodes waeneri* is widely distributed and one of Ireland's commonest caddisflies, being found in canals, lakes, rivers and streams. The gallery building larvae, which are greenish in colour with distinctive ovoid yellow markings, occur on solid surfaces such as rocks and stones where they scrape off algae. In some of the Irish limestone lakes, they share stones with *Psychomyia fragilis* and *Tinodes maculicornis*. The larvae of the three species may be separated by their body colour, presumably because

they are eating different algae. *P. fragilis* has a red tinge while *T. maculicornis* has a bluish one. The larvae of *T. waeneri* supplement their diet by growing their own food through gardening, a behaviour which seems to be widespread. The larvae garden by fertilising their retreats (fixed galleries on which algae and other microorganisms grow) with their excretions. The gallery algae may add up to 40% of all food consumed (Ings, Hildrew and Grey, 2010, 2012). This behaviour is of particular importance in waters poor in nutrients. The species is widely distributed in Europe.

Flight period: April–November (28 April–19 November).

Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Leitrim, Limerick, Longford, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (30/32). The species is known from 235 10km squares (235/1019).

Published records

Morton, 1883 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *McLachlan, 1885* (**ANTRIM:** Belfast (J3473). **DOWN:** R. Lagan (J3472)). *Morton, 1887a* (**MONAGHAN:** Glasslough (H7241)). *King, 1888a* (**DUBLIN:** Lucan (O0335) [R. Liffey]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Ma'am Burn (L9653); Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Cloghereen (V9787); Coppagh Glen (W0382); Gap of Dunloe (V8787); Horses' Glen (V9981); Kilbrean Laogh (W0093); Ross Castle (V9488). **MAYO:** Ballin (L9987), Broad (L9992), Cushinsheen (M0482), Doo (L8368), Doogan (M0094), Knappagh [Knappaghbeg] (M0080) and Prospect (L9581) Laoghs; Carrowbeg R. (M0084). **MONAGHAN:** Glaslough (H7241). **WESTMEATH:** Bog of Allan [Allen] (N0639); Coosan (N0446) [L. Ree]; Shannon (N0341); Wineport (N0746) [L. Ree]). *McLachlan, 1903* (**CORK:** Blarney (W6074)). *King and Halbert, 1910* (**ARMAGH:** Camlough (J0325). **CORK:** Glandore (lakes near) (W2336). **DONEGAL:** Clonkillybeg [L.] (C1219); Glenbeagh (B9918) [Owenbeagh R.]; Largy R. (G6675); Loughs Fern (C1824), Keel (C1524), Reelan (C1327) and Salt (C1226). **DUBLIN:** Lucan (O0335) [R. Liffey]; mountain streams. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Maam R. (L9653); Maumwee [Manwee] L. (L9748). **KERRY:** Gap of Dunloe (V8787); Killarney district; Loo Bridge (W0881) [on the upper R. Flesk]; near Kenmare (V9471); etc. **MAYO:** Newport (L9893) and Westport (L9984) districts. **MONAGHAN:** Glaslough (H7241). **WESTMEATH:** Bog of Allen (N0639); Coosan (N0446) [L. Ree]; Shannon (N0341); Wineport (N0746) [L. Ree]. **WEXFORD:** Johnstown Castle (T0216) [small lakes]. **WICKLOW:** L. Dan (O1502)). *Halbert, 1912* (**MAYO:** Newport (L9893); Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Tinodes woeneri* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Cashel Bay (L7942); Inverin (M0822); Oughterard (M1343). **MAYO:** L. Conn (G1516)). *Kimmins, 1932* (**GALWAY:** Leenane [Leenaun] (L8762)). *Beirne, 1939* (**DUBLIN:**

Seapoint (O2229)). *Frost, 1942* (**WICKLOW:** Ballysmuttan (O0514) [R. Liffey]). *Beirne and Harris, 1946* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Partridge and Foy, 1972* (**MAYO:** L. Feeagh (F9600), (F9601), (F9602), (F9700), (L9598), (L9698), (L9699), (L9798), (L9799)). *Fahy, 1972a* (**MAYO:** (F9505), (L9665). **SLIGO:** (G5325). **TIPPERARY:** (R9930)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Fahy, 1972c* (**MAYO:** Altahoney R. (F9605)). *Edington and Alderson, 1973* (**KERRY:** larva). *Moriarty, 1973a* (**CLARE:** L. Derg (R6070) = [R6978]; L. Inchiquin (R2080) = [R2789]). *Bracken and Murray, 1973* (**CORK:** L. Avaul (V9153); L. Reenydonegan (W0051). **KERRY:** L. Kilbrean (W0093)). *Moriarty, 1974* (**CLARE:** L. Derg (R6978)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *O'Connor and Norton, 1977* (**WESTMEATH:** Hare Island, L. Ree (N0446); L. Coosan (N0544)). *Speight, 1977* (**WESTMEATH:** Coosan Pt. [Coosan (N0446)]). *McCarthy, 1977* (**MEATH:** Trimblestown R. (N7262)). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7007), (H6907), (H7106). **WICKLOW:** L. Dan (O1504), (O1502)). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Bracken, 1980b* (**DUBLIN:** R. Tolka (O1037), Abbotstown Gate). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480), (V7186), (V7192)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9191), (V9290), (V9788); Muckross Lake (V9385), (V9685); Upper Lake [Killarney]). *Murphy and Carter, 1984* (**ANTRIM:** L. Neagh (J1181), (J0485). **DERRY:** L. Neagh (H9586), (H9485)). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1325), (O1326)). *Carter and Murphy, 1993* (**IRELAND:** L. Neagh). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 9 out of 70 sampled sites). *White and Irvine, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 19 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1673), (M1777)). *Anon., 2008* as *Tinoedes* (**DUBLIN:** Delvin R. (O1160)). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *Atalah et al., 2010* (**IRELAND**). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lake (R5188), 262m. **GALWAY:** lowland lake (M0229)). *Little and Free, 2013* (**CAVAN:** Corglass L. (H3409); Derrybrick L. (H3412); Derrycassan L. (H2212); L. Ramor (N6285); L. Sheelin (N4385); L. Sillan (H7106); Skeagh L. Upper (H6500). **CLARE:** Finn L. (R4370); L. Bunny (R3796); L. Cullaun (R3190), (R3290); L. Cullaunyheeda (R4774); L. Gar [given as D] (R5473); L. Graney (R5690); L. Inchiquin (R2789); Muckanagh L. (R3792). **CORK:** Glenbeg L. (V7053). **DONEGAL:** Dunglow L. (B7811); Gartan L. (C0515); Glen L. (C1029); Kiltooris Lake (G6797); L. Anure (B8216); L. Eske

(G9783); L. Fad (C3942); L. Fern (C1823); L. Finn (B9101); L. Golagh (G9666); L. Key [grid reference of G8460 seems incorrect and not included]; L. Mourne (H0789); L. Nacung Upper (B8920); L. Naminn (C3941); L. Veagh [Beagh] (C0121); L. Waskel (B7316); Namanfin [lake top of Corker R. near Ardara] (G7983). **GALWAY:** Aughrusbeg L. (L5558); Ballycuirke (M2231); Ballinahinch [Ballynahinch] Lake (L7648); Ballynakill L. (L8622); Derryclare (L8248); Glendollagh [Garroman Lake] (L8447); Glenicmurren [Glenicmurrin] L. (M0031); Kylemore L. (L7755); Letterercraffroe L. (M0537); Loghanillaun (L8441); L. Anaserd (L6044); L. Nahalseam [Aphreaghaun] (L9744); L. Ardderry (L9945); L. Bofin (M0344); L. Corrib (M2541); L. Fee (L7961); L. Hibbert (L8822); Ross Lake (M1836); L. Maumwee [Manwee] (L9748); L. Maumeen [the grid reference of L6141 appears to be in the sea and not includedL. Nafooey (L9759); L. Nagravin (L9921); L. Rea (M6115), (M6215); L. Shindilla (L9646); L. Skannive (L8032); Nambrackkeagh [lake] (L8260); Oorid L. (L9346). **KERRY:** Cloon L. (V7077), (V7078); Cloonaghlin L. (V6070); Cloonee L. (middle) (V8164); L. Barfinnihy (V8476); L. Caragh (V7190); L. Currane (V5165); L. Guitane (W0385); L. Inchiquin (V8363); L. Nakirka (V7389). **LEITRIM:** Glenade L. (G8246); Glencar L. (G7543); L. Allen [the given grid references of G9639 and G9640 are incorrect and are corrected here to G9620]; L. Bofin (N0489); L. Melvin (G9054); L. Rinn (N0994); L. Sallagh (N1691); L. Tap (N0194). **LONGFORD:** L. Forbes (N0882); L. Kinale (N3980). **MAYO:** Ballymore L. (G2912); Beltra L. (M0798); Carrowkeribly [Ballycong] L. (G2611); Derryhick L. (M2099); Glencullin [Glenullin] L. (L8169); Islandeady L. (M0988); Levally L. (G1404); L. Carra (M1871); L. Conn (G1810); L. Cullin (G2303); L. Feeagh (F9600); L. Mask (M1060); Urlaur L. (M5188). **MEATH:** L. Bane (N5571). **MONAGHAN:** Drumlona L. (H6317); White L. (H6819). **ROSCOMMON:** Annaghmore L. (M9083); Cavetown L. (M8397); Cloonagh L. (M5487); Errit L. (M5485); L. Drumharlow (G9001); L. Nablahy (M9588); L. O'Flynn (M5879). **SLIGO:** Cloonacleigha L. (G6115); Easky L. (G4422); L. Gara (M7099); L. Skean (G8512); L. Talt (G3915). **WATERFORD:** Coumduala L. (S2914). **WESTMEATH:** Coosan L. (N0544); L. Derravaragh (N4066); L. Ennell (N4146); L. Lene (N5168). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Flesk (V9789); R. Galey (R0139); R. Inny (V5572)). *O'Connor, Bond and O'Connor, 2013* (**FERMANAGH:** Upper L. Erne (H3524)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Crew Burn (J1370); R. Clogh (D0613); R. Crumlin (J1976); R. Main (J0889). **DERRY (LONDONDERRY):** R. Aghadowey (C8722); R. Owenbeg (C6809). **DOWN:** R. Annacloy (J4448); R. Annalong (J3719); R. Lagan (J2551); R. Mullagh (J3316); R. Shankys (J2225); Upper Bann (J1345). **TYRONE:** Black Water (H2974); Tullynadall Burn (H4490)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Tar (R9419), (R6019), (R9919)). *Baars et al., 2014* (**IRELAND:** recorded in 7 of 12 upland peatland lakes). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Lower L.

Erne (H2053), (H1758); Mill L. (H2438); R. Erne (H2637); Upper L. Erne (H2339), (H2731)). *Anon., 2015a* (**KERRY:** Killarney National Park (V9490)). *Lucey, 2015* (**KILKENNY:** Aughavaud (S7237). **WEXFORD:** Aughboy (T1955)).

Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), 26 adults 1885, CGB, RMCL Coll. (BMNH); **Rea's Wood** (J1485), MT ♂ 19 July 1985, MB, det. JPOC. **CARLOW: R. Barrow** (S7238), St Mullins, ♂♂♀♀ 17 June 1991 & 20 May 2012, JPOC, lockhouse, ♂♀ 22 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9161), Clonegal, adult 31 August 1946, JFH; s**tream** (S7237), entering R. Barrow, ♂ 5 July 2014, JPOC/MAOC, det. JPOC; **CAVAN: Annagh L.** (H3912), ♀ 26 May 1973, JPOC; **Corrakane L.** (H4000), small lake, 12♂♂3♀♀ 16 June 1973, LT 2♂♂ 4-5 August 1973, JPOC; **Drummany L.** (H3712), 23♂♂9♀♀ 4 August 1973, JPOC; **Levey L.** (H5002), 6♂♂4♀♀ 28 September 1973, JPOC; **L. Barfinnihy** (V8476), 2♂♂2♀♀ 11 October 1972, JPOC; **L. Brackley** (H1921), 6♂♂9♀♀ 4 August 1973, JPOC; **L. Cuilcagh** (N6389), larva exposed rocky shore, 29 March 1973, 4♂♂2♀♀ 10 August & 2♂♂48♀♀ 2 October 1972, JPOC, 3♂♂ 1 August 1986, CM/OSF (SINMNH); **L. Gowna** (N2889), larvae 1996/1997, JW; **L. Inchin** (H3808), ♂ 29 September 1973, JPOC; **L. Mullagh** (N6785), 10♂♂6♀♀ 10 August, 14♂♂3♀♀ 31 August & 7♂♂27♀♀ 4 October 1972, ♂2♀♀ 1 August & 2♀♀ 27 September 1973, 171 larvae exposed rocky shore, larva reed bed & 50 larvae sheltered rocky shore, 3 April 1973, 3♂♂♀ 20 May 1974, JPOC, larvae 1996/1997, JW; **L. Ramor** (N5987), 13♂♂13♀♀ 10 August 1972, (N6087), 6♂♂15♀♀ 2 August 1973, JPOC, larvae 1996/1997, JW; **L. Sheelin** (N4686), adult 26 August 1946, JFH, (N4786), 7♂♂2♀♀ 5 August 1973, JPOC, (N4183), Kelly's Bay, 9 larvae 11 June 1975, KFW, det. JPOC, (N4686), Woodlawn, Crover, ♂♂♀♀ 6 August 1990, ♂♂♀♀ 12 September 1991 (NMI), JPOC, 2♂♂♀ 24 August & 3♂♂6♀♀ 10 September 1972, IFT, det. JPOC, IETS 1973/1974: (N4384), Kilnahard Bay, 12 adults, (N4183), Kelly's Bay, 11 adults, (N4685), Crover, 64 adults, (N4586), near Arley Point, 63 adults, PG; **L. Sillan**, 20 larvae exposed rocky shore, 3 larvae reed bed & 6 larvae sheltered rocky shore, 26 March 1973, (H6906), 4♂♂4♀♀ 26 June, 49♂♂64♀♀ 30 August & ♂ 3 October 1972, 7♂♂5♀♀ 31 July 1973, LT 4♂♂♀ 31 July-1 August 1973, (H7007), 2♂♂♀ 27 July, 39♂♂23♀♀ 9 August & ♂♂♀♀ 11 August 1972 (NMI), lamps 92♂♂28♀♀ 27 July, 11♂♂10♀♀ 30 August & 8♂♂3♀♀ 31 August 1972, light 29♂♂24♀♀ 11 August & 4♂♂5♀♀ 30-31 September 1972, (H7106), 23♂♂32♀♀ 11 August & 19♂♂15♀♀ 1 September 1972, JPOC; **L. Tacker** (H6908), 8♂♂12♀♀ 1 September 1972, JPOC; **Moneen L.** (G9828), 13♂♂12♀♀ 3 August 1973, JPOC; **Moyduff Lake** (H6909), 7♂♂9♀♀ 10 August 1973, JPOC; **R. Annalee** (H6806), above L. Sillan, ♂ 27 July 1972, JPOC; **R. Blackwater** (N6383), below L. Ramor, ♂ 2 August 1973, JPOC, 10♂♂5♀♀ 1 August 1986, CM/OSF (SINMNH); **R. Erne** (H3712), Baker's Bridge, ♂ 4 August 1973, JPOC; **Swanlibar** (H1524), 2♀♀ 3 August 1973, JPOC. **CLARE: Knockalough** (R1463), 17♂♂♀ 9 July & 7♂♂6♀♀ 29 August

1973, LT 3♂♂6♀♀ 8-9 July 1973, JPOC; **Lickeen Lake** (R1891), 4 larvae 10 July & 14♂♂13♀♀ 31 August 1973, JPOC, larvae 1996/1997, JW; **L. Ballycullinan** (R2885), larvae 1996/1997, JW; **L. Bunny** (R3796) ♀ 31 August 1973, JPOC; **L. Cullaun** (R3290), larvae 1996/1997, JW; **L. Derg** (R7186), Mount Shannon, LT 10♂♂10♀♀ 26-27 August 2003, KGMB, det. JPOC, (R6878), Tinarana Bay, ♂ 3 August 1976, LT 98♂♂312♀♀ 2-3 September 1973, larvae 17 June 1976 (NMI), JPOC; **L. Doo** (R1171), 4♂♂3♀♀ 29-30 August 1973, JPOC; **L. Doon** (R5674), 2♂♂ 12 July 1973, JPOC; **L. Graney** (R5691), 8♂♂7♀♀ 3 September 1973, JPOC, larvae 1996/1997, JW; **L. Inchiquin** (R2789), 20♂♂8♀♀ 4-6 June 1972, 3♂♂5♀♀ 10 July 1973, LT 35♂♂10♀♀ 31 August-1 September 1973, JPOC, larvae 1996/1997, JW; **L. Moghna** (R1384), 4♂♂ 9 July & 10♂♂2♀♀ 30 August 1973, JPOC; **L. Raha** (R2686), MK; **L. Teereen** (R4671), LT ♀ 11-12 July 1973, JPOC; **O'Brien's Big Lake** (R4182), LT ♂3♀♀ 1-2 September 1973, JPOC; **pond** (R6566), 2♂♂3♀♀ 2 September 1973, JPOC; **R. Caher** (M1608), LT 3♂♂8♀♀ 30-31 August 1973, JPOC; **R. Cloon** (R1656), ♂5♀♀ 29 August 1973, JPOC (NMI); **R. Denlagh** (R1191), 3♂♂2♀♀ 30 August 1973, JPOC; **R. Fergus** (R2591), above L. Inchiquin, ♂♀ 1 September 1973, (R2688), below L. Inchiquin ♀ 1 September 1973, JPOC; **R. Shannon** (R6767), O'Brien's Bridge, 4♂♂11♀♀ 3 September 1973, JPOC; **stream** (R4182), entering O'Brien's Big Lake, ♀ 1 September 1973, JPOC. **CORK: Annahala Bridge** (W3371), ♂ 20 August 1983, KGMB; **Ballin L.** (W1938), near Leap, ♂♂ 12 August 1999, PA, det. JPOC; **Ballyhickey** [Ballylickey] (W0053), larva 15 June 1952, N. E. Hickin (per IDW); **Blarney** (W6074), adult 20 June 1902, RMCL Coll. (BMNH); [**Cape**] **Clear Island** (L. Errul) (V9421), ♂ 2 June 1985, KGMB, det. JPOC; **Glandore** (W2336), ♂2♀♀, conf. JPOC (NMI); **Healy Pass** (V7855), Beare [Beara] Peninsula, 3♀♀ 20 August 1981, HM, det. H. Malicky; **Lee Reservoirs** (W4871), adult, MK; **L. Abisdealy** (W1331), near Skibbereen, MVLT ♂ 15-16 August 1992, KGMB, det. JPOC; **L. Allua** (W1965), MVLT, KGMB, det. JPOC; **L. Avaul** (V9153), adults July-October 1969, MK; **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.); **R. Blackwater** (W5397), near Mallow, ♂ 4 August 1986, CM/OSF (SINMNH); **Shippool** (W5654), ♀ 1 June 1986, KGMB, det. JPOC. **DONEGAL: Coxtown** (G9271), lake near, ♂ 26 June 1981, JPOC; **Glenveagh National Park** (C0423), RLT 2♂♂ 6 August 1982, COK, det. JPOC; **Kilmacrenan** [L. Reelan] (C1327), ♂ 14 July 1891, [JJFXK] (labelled "T. maculicornis ♂"), misidentified as *T. maculicornis*, the specimen is a small ♂ *T. waeneri*), det. JPOC (HMAG). **DUBLIN: Bohernabreena** (O0921), river, ♂♀ 11 June 2015, JPOC/MAOC, det. JPOC; **Dublin Mountains** (O1418), Glencree, stream, ♂ 11 August 1909, conf. JPOC (NMI); **R. Dodder** (O1730), Clonskeagh, adult 12 June 1945, adult 12 September 1946, JRH; **R. Liffey** (O0335), Weir, Lucan, 2♂♂♀ 31 July 1986, (O0835), Strawberry Beds, ♂♀ 10 July 1972, 9♂♂♀ 31 May 1973, JPOC, (O0735), Strawberry Beds, ♂ 12 August 2014, ♂ 29 August 2015, JPOC, (O0735), east of Lucan, 3♂♂ 31 July 1986, CM/OSF (SINMNH), (O0335), Lucan, adults 12

May 1945, 15 September & 5 October 1946, JRH, (O0235), Lucan Demesne, 6♂♂11♀♀ 18 September 1973, JPOC; **Royal Canal** (O0838), The Twelfth Lock, ♂♀ 28 August 2014, JPOC. **FERMANAGH: Crom Estate** (H3524), LT ♀ 24 September 2013, KGMB, det. JPOC (NMI); **Lower L. Erne** (H1758), near White Cairn, Castle Archdale County Park, 3♂♂ 13 May 2015, JPOC/MAOC, det. JPOC (NMI); **R. Erne** (H2637), Cloonatrig, Bellanaleck, ♂♀ 2 September 2015, JPOC/MAOC, det. JPOC. **GALWAY: Clare R.** (M4049), larva 11 August 1971, AFF, det. JPOC; **Connemara National Park** (L7455), Polladirk R., larvae 1991, SV, conf. JPOC, (L7157), acidophilous woodland, MT ♂ 30 June-20 July 1994, MCDS, det. JPOC; **Garryland Wood** (M4103), 2 larvae 25 June 1977, KP, det. JPOC; **Hollygrove Lake** [Ballaghdacker L.] (M7857), 5♂♂ 7 August 2001, JPOC; **Inver** (L9139), adult 25 September 1946, JFH; **Inverin** (M0822), 10 adults 17 July-2 August 1926, MEM (BMNH); **Loch an Droichid outflow** (M0542), Derryerglinna, LT ♂ 13 September 2014, MG/CC, det. MG; **L. Acalla** [Callow L.] (M7234), adult, MK; **L. Ballyquirke** (M2331), larva 1996/1997, JW; **L. Corrib** (M1745), adults July-October 1964, MK, (M2531), Hurney's Point [near Moycullen], MVLT ♂2♀♀ 28 August, 2♂♂14♀♀ 12 September, 9♂♂♀ 14 September, 60♂♂72♀♀ 16 September, 2♂♂4♀♀ 25 September 2003, (M2642), Keekill, 2♂♂2♀♀ 2 August 2003, KGMB, det. JPOC, (M2741), Cloonmore, LT ♀ 6 August 2014, MG/CC, det MG, (M2341), Knockferry, LT ♂3♀♀ 21 August 2014, MG/CC, det. MG; **L. Cutra** (R4698), MVLT, ♂♂♀♀ 30 August 1996, KGMB, det. JPOC; **L. Lettercraffroe** (M0537), larva 1996/1997, JW; **L. Mask** (M0957), Kilbeg Lower, LT ♂♀ 16 August 2014, MG; **L. Maumwee** [Manwee] (L9748), larvae 1996/1997, JW; **L. Rea** (M6215), larvae 1996/1997, JW; **Ma'am** (L9653), 2♂♂♀, JJFXK, conf. JPOC (NMI); **Oughterard** (M1343), adult 3-9 August 1926, MEM (BMNH); **Pollacappul** (L7458) [lake], Kylemore Abbey, ♂ 25 July 1982, JPOC; **R. Corrib** (M2925), Nun's Island, 5♂♂3♀♀ 29 August & 16♂♂6♀♀ 30 August 1978, DMG, det. JPOC; **R. Shannon** (M8705), near Portumna, grab 45 larvae 12 July 1973, AFF, det. JPOC; **Roundstone** (L7140), adult, F. O'Rourke, det. JRH; **Summerville L.** (M6049), picnic area, ♂ 25 July 2012, MG. **KERRY: Derriana L.** (V6073), 3♂♂ 6 July & 33♂♂7♀♀ 26 August 1973, JPOC; **Iveragh Peninsula** (V7184), near west Glencar, ♂ 18 August 1981, HM, det. H. Malicky; **Kenmare** (V9471), ♀ 18 August 1902, JJFXK, conf. JPOC (NMI); **Kilbrean Lake** (W0093), adults July-October 1969, MK, 4♂♂14♀♀ 7 September 1972, JPOC; **Killarney**, adult 13 August 1887, [JJFXK], Harwood Coll. (BMNH), ♂♀ 3 August, ♂ 11 August & 13a August 1887, JJFXK, det. JPOC (NMI), adult July 1940, BPB, det. JRH, adult 20 October 1946, JRH; **L. Caragh** (V7292), larva & 10♂♂8♀♀ 27 August 1973, JPOC; **L. Currane** (V5065), Waterville, adult 18 August 1965, JRH, ♂ 6 July & 6♂♂4♀♀ 25 August 1973, JPOC; **L. Doon** [L. Slat] (Q6108), larva & ♂♀ 7 July & 4♂♂8♀♀ 28 August 1973, JPOC; **L. Gill** (Q6114), 7♂♂2♀♀ 28 August 1973, JPOC; **L. Guitane** (W0385), 19♂♂74♀♀ 10 October 1972, ♂ 3 July & 2♂♂ 14 October 1973, JPOC; **L. Leane**, 5 larvae exposed rocky shore & 2 larvae

sheltered rocky shore, 10 April 1973, (V9787) Castlelough Bay, larva February 1972, EJW, (V9191), Fossa Shore, larvae July 1971, larvae August 1972, EJW (NMI), (V9290), Mahoney's Point, larvae July 1972, EJW (NMI), (V9291), Golf Course, ♂♂♀ 5 September 1972 (NMI), 23♂♂8♀♀ 24 August 1973, 3♂♂ 29 May 1974, ♂ 26 August 1987, ♀ 15 September 1981, larvae June 1972, EJW (NMI), (V9686), boat house, 88♂♂18♀♀ 5 September 1972, 21♂♂3♀♀ 23 August 1973, ♂ 29 May 1974, (V9188), O'Sullivan's Cascade shore, 5♂♂2♀♀ 13 October 1973, (V9488), Ross Castle, ♂ 18 May & 5♂♂2♀♀ 13 October 1973, 3♂♂♀ 29 May 1974, (V9291), Hotel Europe, 9♂♂5♀♀ 5 September 1972, (V9590), Kenmare Estate, 3♂♂♀ 5 September 1972, JPOC; **L. Looscaunagh** (V8879), 12♂♂15♀♀ 11 October 1972, stream entering lake, ♂♂♀ 11 October 1972 (NMI), JPOC; **L. Nakirka** (V7389), 11♂♂13♀♀ 27 August 1973, JPOC; **L. Slat**, Stadbally (Q6008) [corrected], adult 13 September 1982, EGH, det. JRAG (BMAG) (per IDW); **Muckross Lake** (V9485), LT ♂ 11-12 October 1972 (NMI), (V9485), Colleen Bawn (Baun), 19♂♂6♀♀ 23 August 1973, (V9685), boat house, ♂♀ 24 August 1973, (V9684), Torc Shore, 12♂♂♀ 24 August & ♂♀ 12 October 1973, JPOC, (V9685), Dundag Bay, IETS, ♂ 7 September & ♂♀ October 1972, UCD, det. JPOC; **R. Blackwater** (V7969), 11♂♂3♀♀ 26 August 1973, JPOC; **R. Caragh** (V7186), 2♂♂♀ 27 August 1973, JPOC; **R. Ferta** (V5282), ♂♀ 6 July 1973, JPOC; **R. Flesk** (V9689), ♀ 14 October 1973, JPOC; **R. Inny** (V5673), ♂ 26 August 1973, JPOC; **R. Lee** (Q8512), ♀ 28 August 1973, JPOC; **Roughty R.** (V9873), ♂♀ 26 August 1973, JPOC; **stream** (Q8905), into R. Maine, ♀ 7 July 1973, JPOC; **stream** (R0540), into R. Galey, ♀ 29 August 1973, JPOC; **stream** (V9673), into Roughty R., 6♂♂3♀ 4 July 1973, JPOC; **Upper Lake, Killarney** (V9383), Visitors' Place, 40♂♂15♀♀ 6 September 1972, (V9181), 4 larvae exposed rocky shore, 13 April 1973, JPOC. **KILDARE: Lyon's Lake** (N9728), Newcastle Demesne [Lyons Estate], adult 9 June 1947, JRH; **R. Liffey** (N8827), Clane, 6♂♂3♀♀ 11 July 1972, JPOC. **KILKENNY: R. Nore** (S6337), Inistioge, ♀ 21 July 2015, JPOC/MAOC, det. JPOC. **LEITRIM: Glencar Waterfall** (G7543), 2♂♂ 25 August 1992, JPOC; **L. Bofin** (N0489), 17 larvae 20 July 1972, AFF, det. JPOC; **L. Melvin** (G9249), 4♂♂ 7 August 1992, JPOC. **LIMERICK: L. Gur** (R6441), 4 larvae 12 May 1973, JPOC; **R. Camogue** (R5239), Croom, adult 2 September 1948, JRH; **R. Shannon** (R6663), Castleconnell, LT ♂ 12-13 July 1973, (R5757), St John's Castle, ♂ 5 June 1992, JPOC. **LONGFORD: Knappagh** [Knappaghbeg] (M0080), near Westport (L9984), ♂ 3 August 1911, Grimshaw (NMS); **L. Forbes** (N0881), 4 larvae 20 July 1972, AFF, det. JPOC; **L. Ree** (N0069), Lanesborough, ♀ 14 August 2001, JPOC; **R. Shannon** (N0684), north of L. Forbes, 3♂♂♀ 16 July 1978, JPOC. **MAYO: brook** (G2105), near Pontoon, ♂ 18 August 1981, HM, det. H. Malicky; **Clare Island** (L6985), MT ♂, SF, conf. JPOC (NMI), (L7085), ♂ 17 May 2003, KGMB, conf. JPOC (NMI); **Glennamoy** (F8833), lake near, ♂♀ 28 August 1972, JPOC; **L. Carra** (M1673), adults July-October 1964, MK, (M1677), Castleburke, ♂ 28 June 2001, JPOC; **L. Conn** (G1516), adult 16-23 September 1929, MEM

(BMNH), adults July-October 1964, MK, (G1705), adult 9 September, D. Shackleton, det. JRH; **L. Feeagh** (F9700), larvae 1996/1997, JW; **L. Feenagh** (L9699), adults June-August 1964, MK, ♂♀ 27 August 1987, JMCH, det. JPOC; **L. Mask** (M1259), (M1465), adults July-October 1964, MK. **MEATH: L. Sheelin** (N4582), Gortport, ♀ 22 September 1973, JPOC, (N4482), Goreport Bay, IETS 1973/1974 8 adults, PG. **MONAGHAN: Castleblaney** (H8319) [L. Muckno], ♀ 1 August 1987, KGMB, det. JPOC; **Emyvale** (H6843), ♂, [KJM], (NMS); **Glaslough** (H7241), ♂, [KJM], (NMS), ♂ 12 August 1973, JPOC; **L. Egish** (H7714), larva 1996/1997, JW; **L. Moylemuck** (H6415), 5♂♂ 24 July 1972, JPOC; **L. Muckno** (H8319), larva 1996/1997, JW; **L. Shantonagh** (H7510), adult 11 July 1965, JRH; **Monalty L.** (H8602), ♂ 3 August 1980, KGMB, det. JPOC (NMI); **Nuremore** (H8502), pond, ♂ 28 April 2011, JPOC. **OFFALY: Pallas Lake** (N2719), adult 21 August 1965, JRH. **ROSCOMMON: Cornacarta L.** (G8309), adults July-October 1964, MK; **L. Key** (G8404), Rockingham, 2♂♂ 11 August 2001, JPOC, (G8506), 4 larvae 18 July 1972, (G8205), 12 larvae 18 July 1972, (G8207), 22 larvae 17 July 1972, AFF, det. JPOC, (G8205), near Boyle R. inlet, ♂♀ 10 August 1996, PCB; **L. O'Flynn** (M5878), ♀ 16 August 2001, JPOC; **L. Ree** (N0245), Yellow Island, 16 adults 22 August 1958, PHW (BMNH); **R. Suck** (M8257), Athleague, ♂ 15 August 2001, JPOC. **SLIGO: Castledargan Lake** (G7228), adults July-October 1964, MK; **L. Arrow** (G7711), adult June 1909, Mosely Bequest (BMNH), adults July-October 1964, MK; **L. Bo** (G7918), adults July-October 1964, MK; **L. Easky** (G4422), larvae 1996/1997, JW; **L. Gara North** (G7101), larvae 1996/1997, JW; **L. Gara South** (M6997), larvae 1996/1997, JW; **L. Gill** (G7733), Inishfree, larvae 20 July 1989, DAG/JML, det. JML; **L. Talt** (G3915), larvae 1996/1997, JW; **R. Easky** (G4032), near Patch, 2♀♀ 24 August 1992, JPOC. **TIPPERARY: Kilmastulla R.** (R6867), 1976-1977, larvae/adults, MAOC; **R. Lingaun** (S4031), Slate Quarries, 2♂♂♀ 18 August 2000, JPOC; **R. Suir** (S1267), larvae 10 March & 22 May 1992, (S1362), larvae 10 March 1992, (S1258), larvae 22 May 1992, (S1255), larvae 22 May 1992, DAG/JML, det. JML, (S3921), Carrick-on-Suir, ♂♀ 20 May 1997, JPOC. **WATERFORD: Ballyscanlan L.** (S5403), ♀ 8 July 2014, JPOC/MAOC, det. JPOC; **Belle Lake** (S6605), ♀ 11 June 1991, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♀ 13a July & ♂ 24 July, ♂ 9 August 1888, JJFXK, conf. JPOC (NMI); **L. Derravaragh** (N4662), 5♂♂♀ 18 August 1978, JPOC, (N3968) bay near R. Inny, IETS 1973/1974 adult, PG; **L. Ennell**, July-October 1971, MK, (N3847), 4 larvae sheltered rocky shore & larva exposed rocky shore, 15 May 1973, (N3947), larva reed bed, 15 May 1973, JPOC, IETS 1973/1974: (N4048), Shaunoge Shallows, adult, (N4147), Goslin Island, 8 adults, (N4147), near Goose Island, 4 adults, (N4045), Carrick Bay, 46 adults, (N3944), Robin's own shore, 33 adults, (N3844), mid lake off Robin's own shore, 10 adults, PG; **L. Owel** (N4156), adults July-October 1971, MK, larvae 1996/1997, JW, IETS 1973/1974: (N4056), Srudoora Island, adult, near (N3657), Carrickphilbin Island, 4 adults, (N3859), near Wattstown, 6 adults, (N4158), Gaynor

Point, 3 adults, PG; **L. Ree** (N0245), Carby [Carberry] Island, ♂ 18 August 1958, Kimmins, det. PHW, conf. JPOC (BMNH), Coosan Point (N0446), 2 larvae 6 June 1977, JPOC (NMI); **L. Sheelin** IETS 1973/1974: (N4381), off Goreport Point, 3 adults, (N3946), mid-lake, off Dysart Island, 2 adults, PG, (N0544), Creaghduff (Coosan), MVLT 2♂♂ 17 August 1980, JS, conf. JPOC; **R. Deel** (N5565), larvae September 1989, DAG/JML, det. JML. **WEXFORD: J. F. Kennedy Park** (S7218), streams, ♂ 14 July 1987, JPOC; **near Whitestown** (N2719), ponds, ♂ 9 June 1978, JPOC/MAOC, det. JPOC; **Oaklands Wood** (S7125), stream, ♂ 9 July 2014, JPOC; **R. Slaney** (S9739), Enniscorthy, 2♂♂ 27 July 2015, JPOC/MAOC, det. JPOC. **WICKLOW: Annalecka Brook** (O0001), 9♂♂7♀♀ 23 August 1973, JPOC (NMI); **Annamoe R.** [Inchavore] (T1799), 2♂♂ 19 August 1973, JPOC; **Avonmore R.** (T1593), 2♂♂ 21 July 1973, JPOC; **Browns Beck Brook** (Carrigower R.) (S9194), 4♂♂♀ 23 July 1973, JPOC; **Dargle R.** (O1418), Glencree, adult 5 August 1946, JFH; **Glencullen R.** (O1919), 9♂♂6♀♀ 22 July 1973, JPOC; **King's R.** (O0401), LT ♂15♀♀ 22-23 July 1973, JPOC; **L. Dan,** 295 larvae exposed rocky shore & 117 larvae sheltered rocky shore, 27 April 1973, JPOC, (O1502), ♂ 29 September & ♂ 30 September 1909, conf. JPOC (NMI), JPOC, larvae 1996/1997, JW, (O1504), 11♂♂30♀♀ 1 August, 28♂♂18♀♀ 4 August, 6♂♂9♀♀ 16 August, 18♂♂23♀♀ 24 August & 2♂♂ 20 October 1972, 5♂♂ 21 July 1973, LTS 14♂♂2♀♀ 21-22 June 1973, (O1502), 3♂♂2♀♀ June & ♀ July 1971, 2♀♀ 12 August 1973, JPOC; **Lower L. Bray** (O1416), ♀ 18 August 1973, JPOC, (O1316), LT 3♂♂ 21-22 July 1973, JPOC, larvae 1996/1997, JW; **Polluphuca (Blessington) Reservoir** (O0108), ♂♀ 22 July 1973, JPOC; **Powerscourt Waterfalls** (O1912), 5♂♂8♀♀ 31 July 1986, CM/OSF (SINMNH), **R. Avonbeg** (T0396), Glenmalure, adult 29 July 1946, JRH; **R. Liffey** (O0514), Ballysmuttan, adult 10 July 1947, JRH, 8♂♂6♀♀ 22 July 1973, JPOC; **R. Slaney** (S8892), LT ♂4♀♀ 24-25 July 1973, JPOC; **stream** (N9911), near Lacken, ♂ 31 August 1986, JPOC; **Upper Lake, Glendalough** (T1096), 2♂♂♀ 21 July & ♀ 19 August 1973, JPOC; **Upper L. Bray** (O1315), ♀ 18 August 1973, JPOC; **Sally Gap** (O1012), Wicklow Mountains, ♀ 16 August 1981, HM, det. H. Malicky; **Vartry Reservoir** (O1903), 2♂♂2♀♀ 6 June & ♂ 19 August 1973, LT ♂4♀♀ 19-20 August 1973, JPOC, (O2004), Roundwood, LT ♀ 12 July 1983, HAD, conf. JPOC; **Vartry R.** (T2797), 18♂♂13♀♀ 4 August & 3♂♂3♀♀ 24 August 1972, 5♂♂2♀♀ 20 July 1973 (NMI), JPOC.

HYDROPSYCHIDAE

59. *Cheumatopsyche lepida* (Pictet, 1834)

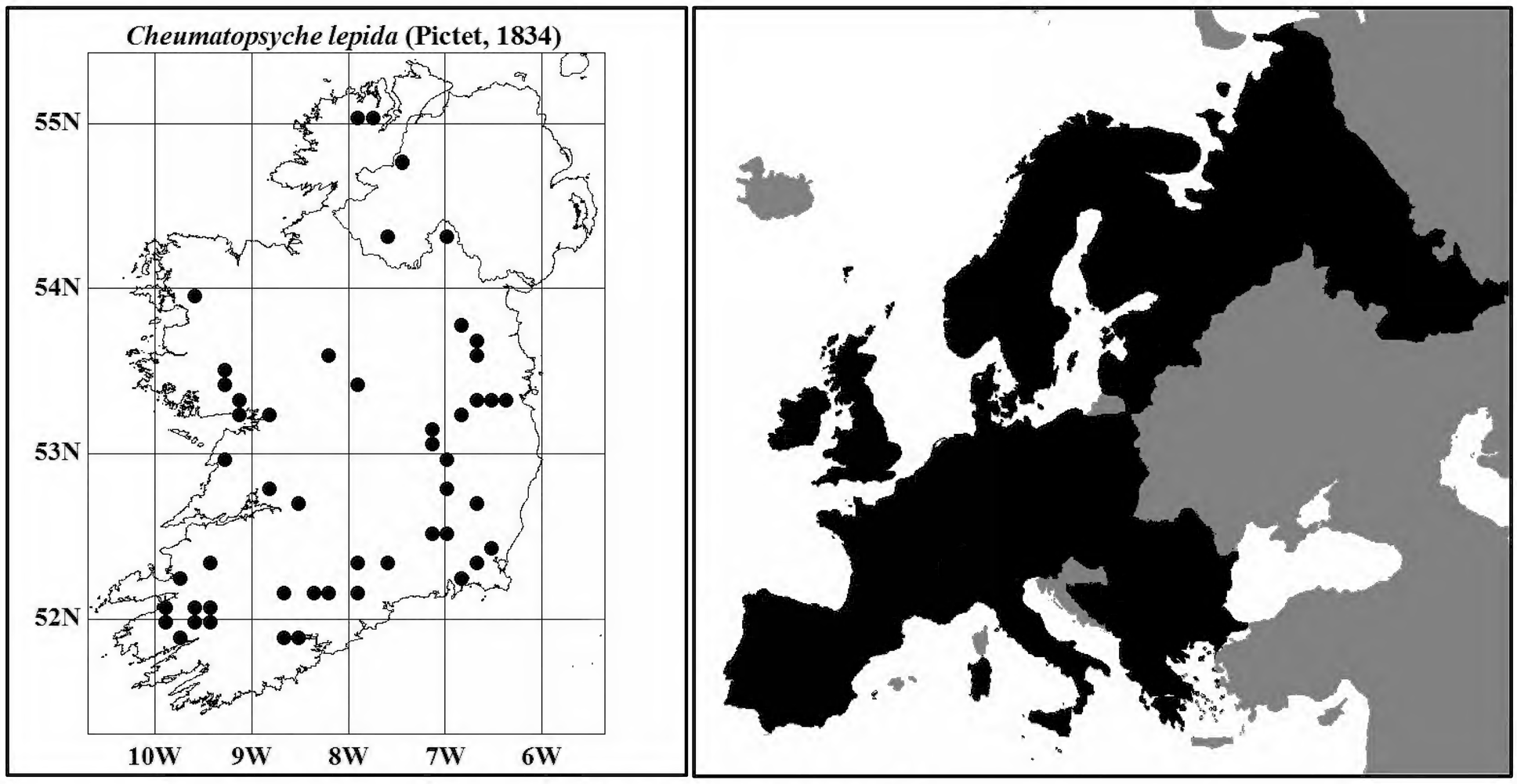
Cheumatopsyche lepida is widely distributed in Ireland. The net-spinning larvae occur on solid surfaces in large streams and rivers where they trap food including algae and small animals. The adults can occur in huge numbers on some of the large Irish rivers. The species is widespread in Europe.

Flight period: June–September (10 June–5 September).

Counties and 10km squares: Carlow, Clare, Cork, Donegal, Dublin, Fermanagh,

Galway, Kerry, Kildare, Kilkenny, Laois, Limerick, Mayo, Meath, Monaghan, Roscommon, Tipperary, Tyrone, Waterford, Westmeath, Wexford (21/32). The species is known from fifty 10km squares (50/1019).

FIGURES 142-143. Known Irish and European distributions of *Cheumatopsyche lepida*.



Published records

Curtis, 1836b as *Hydropsyche ventralis* (**CLARE:** Loch Derg). *Stephens, 1836 as Hydropsyche angustata* (**CLARE:** Loch Derg). *Hagen, 1860-1861* as *Hydropsyche angustata* (**CLARE:** Loch Derg). *King 1888a* as *Hydropsyche* (**DUBLIN:** Lucan (O0335) [R. Liffey]. **GALWAY:** L. Corrib (near Galway) (M2829). **KERRY:** Cloghereen (V9787), Denough [Deenagh] (V9792) and Flesk (V9689) Rivers; Dinish (V9385); Muckross Abbey (V9787); Ross Castle (V9488). **WESTMEATH:** Shannon (N0341)). *McLachlan, 1903* as *Hydropsyche* (**CORK:** Blarney (W6074)). *King and Halbert, 1910* as *Hydropsyche* (**CORK:** Mallow (W5598) [R. Blackwater]. **DONEGAL:** Lennan Bridge (C1621) [Leannan R.]. **DUBLIN:** Lucan (O0335) [R. Liffey]. **GALWAY:** Cong (M1455); L. Corrib near Galway (M2829). **KERRY:** Killarney and Muckross (V9786) districts. **WATERFORD:** Cappoquin (X0999); Lismore (X0498). **WESTMEATH:** Shannon (N0341). **WEXFORD:** Edenvale (T0427) [R. Sow]). *Mosely, 1930* as *Hydropsyche* (**GALWAY:** Galway (M2829); Oughterard (M1343)). *Beirne, 1939* as *Hydropsyche* (*Cheumatopsyche*) (**CORK:** Ballyhooly (W7298) [R. Blackwater]). *Frost, 1939* as *Hydropsyche* (**KILDARE:** Straffan (N9229)). *Frost, 1942* as *Hydropsyche* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Neboiss, 1963* (**CLARE:** Loch Derg, both sexes in July [1835] on the steam-boat [J. Curtis]). *O'Connor, 1978b* (**KERRY:** R. Caragh (V7192)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7192)). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor, 1987* (**IRELAND:** widespread). *Ashe, 1995* (**KERRY:** R.

Flesk). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 1 out of 70 sampled sites). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune (V8991), the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 5 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** L. Leane (V9686); Muckross Lake (V9685); R. Flesk (V9789)). *O'Connor and Davy-Bowker, 2014* (**TYRONE:** R. Strule (H4186)). *O'Connor and O'Connor, 2014a* (**KILKENNY:** R. Nore, Inistioge (S6337)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Arney R. (H2336)). *Anon., 2015a* (**DUBLIN:** Liffey Valley Park, Waterstown (O0835)). *Lucey, 2015* (**CARLOW:** R. Barrow (S7074). **LAOIS:** R. Barrow (S7074)).

Unpublished records and voucher specimens

CARLOW: Bahana Woods (S7239), 2♂♂5♀♀ 14 June 1991, JPOC; **R. Barrow** (S7238), St Mullins, banks, ♂2♀♀ 17 July 1991, JPOC, (S7237), St Mullins, LTS 2♀♀ 22 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9161), Clonegal, adult 31 August 1946, JRH; **St Mullins** (S7237), small river entering R. Barrow, 2♀♀ 1 July 1991, JPOC/MAOC, det. JPOC. **CLARE: Denlagh R.** (R1191), ♂ 30 August 1973, JPOC; **L. Derg**, on steamer, ♂ (lectoholotype) & ♀ (lectoallotype) July [1835], J. Curtis, designated A. Neboiss (NMV); **north of Sixmilebridge** (R4767) [Rally R.], 20♂♂9♀♀ 6 August 1986, CM/OSF (SINMNH); **R. Cullenagh** (R1388), LT ♂ 9-10 July 1973, JPOC. **CORK: Ballyhooly** (W7298) [R. Blackwater], ♂ 8 August 1939, BPB, conf. JPOC (BMNH); **Blackwater R.** (W5397), west of Mallow, 15♂♂5♀♀ 4 August 1986, CM/OSF (SINMNH); **Blarney** (W6074), ♂ 20 June 1902, det. RMCL, conf. JPOC (BMNH); **Mallow** (W5598) [R. Blackwater], ♂♂, conf. JPOC (NMI); **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.); **R. Lee** (W5671), adult August, MK. **DONEGAL: Glenveagh National Park** (C0423), at light 2♂♂ 4 August 1982, COK, det. JPOC (NMI); **Kilmacrennan** (C1420) [Leannan R.], adult 25 July 1891, [JJFXK] (HMAG). **DUBLIN: Dublin**, ♂ (NMI); **Lucan** (O0335) [R. Liffey], ♀♀ 28 August & 29 August 1888, [JJFXK], Morton Coll. (NMS), ♂ 25 August, ♂ 28 August & ♂2♀♀ 29 August 1888, JJFXK, conf. JPOC (NMI); **R. Liffey** (O0735), Strawberry Beds, 2♀♀ 12 August 2014, 3♂♂ 29 August 2015, JPOC. **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva 3 May 1984, PB, det. JPOC; **Galway** (M2829), 2♂♂ 22a July 1888, [JJFXK], det. RMCL, conf. JPOC (BMNH), 5♂♂ 22a July 1888, JJFX, conf. JPOC (NMI), ♀ 17 July 1926, MEM (BMNH); **Oughterard** (M1343), ♀ 3-9 August 1926, MEM, conf. JPOC (BMNH); **R. Corrib** (M2925), Nun's Island, ♀ 16 August & 2♀♀ 29 August 1978, light ♂ 1-7 August 1973, DMG, det. JPOC. **KERRY: Iveragh Peninsula** (V7184), near west Glencar, ♂ 18 August 1981, HM, det. H. Malicky; **Killarney**, adult 29 June 1887, [JJFXK] (BMNH), ♂♂ 29 June & 24A July 1887, JJFXK (NMS), ♀ 27 June, 2♂♂ 29

June & ♀ 24a July 1887, JJFXK, conf. JPOC (NMI); **R. Blackwater** (V7972), Derrendarragh, ♂ 4 August 1986, CM/OSF (SINMNH); **R. Curraheen** (Q7812), ♂ pupa 8 July 1973, (Q7811), LT ♂ 7-8 July 1973, JPOC (NMI); **R. Flesk** (V9789), LT ♂♂♀♀ 3-4 July 1973, JPOC (NMI), 8♂♂4♀♀ 3 July 1973 (NMI), 5♂♂13♀♀ 25 June 1973, 3♂♂3♀♀ pupae July & 3♀♀ 5 September 1972, JPOC, (V9689), 3 larvae February 1972, EJW (NMI); **R. Laune** (V8892), 2♀♀ pupae August 1972, (V8991), ♀ 24 August 1973, JPOC. **KILDARE: canal** (N7617), at Milltown, ♀ 3 August 1986, CM/OSF (SINMNH); **R. Barrow** (S6892), near Athy, 3 larvae 2 December 2008, PS. **KILKENNY: R. Nore** (S6337), Inistioge, 6♂♂3♀♀ 4 July 1995, JPOC, 17♂♂8♀♀ 10 July 2014, 45♂♂20♀♀ 21 July & 7♂♂2♀♀ 30 July 2015 JPOC/MAOC, det. JPOC. **LAOIS: R. Barrow** (N6210), below Monestrevan, ♂ 3 August 1986, JPOC, (N6301), Dunrally Bridge, 2♂♂4♀♀ 3 August 1986, CM/OSF (SINMNH). **LIMERICK: R. Shannon** (R6663), Castleconnell, 10♂♂♀ 3 August 1988, LT 142♀♀ 12-13 July 1973, JPOC (NMI). **MEATH: R. Blackwater** (N7377), west of Kells, ♂2♀♀ 1 August 1986, CM/OSF (SINMNH), (N8668), larvae 5 September 1988, DAG/JML, det. JML; **R. Boyne** (N9271), Stackallen, adult 10 June/18 July 1947, JRH, (N8968), Blackcastle, 10 larvae 9 September 1988, (N8865), Kilcarn, 117 larvae 5 September 1988, (N8768), The Mollies, 70 larvae 9 September 1988, MFOG, det. JPOC, (N8865), larvae 5 September 1988, DAG/JML, det. JML. **MONAGHAN: Emyvale** (H6843), ♂ 20-30 July [1885-6], Morton Coll., conf. JPOC (NMS). **ROSCOMMON: R. Suck** (M8257), Athleague, 6♀♀ 9 August & 5♀♀ 15 August 2001, JPOC. **TIPPERARY: Cahir** (Ballybrado House) (R0620), ♂♂ 14 July 1986, KGMB, det. JPOC (NMI); **R. Suir** (S0522), Swiss Cottage, Caher [Cahir], ♂3♀♀ 18 July 1990, JPOC. **WATERFORD**: **Cappoquin** (X0999), ♂ 24 July 1902, JJFXK, conf. JPOC (NMI); **Glasha R.** (S3022), 5♂♂♀ 8 July 1989, JPOC/MAOC, det. JPOC, 3♀♀ 18 July 1989, JPOC; **Lismore** (X0498), ♀, GHC, conf. JPOC (NMI); **Lismore Castle** (X0498), ♂ 17 July 1987, JPOC. **WESTMEATH: Athlone** (N0341), 18 July 1888 [JJFXK], (HMAG). **WEXFORD**: **Corock R.** (S8921), ♀ 20 July 2015, JPOC/MAOC, det. JPOC; **Tintern Abbey** (S7910), ♂ 15 June 1990, JPOC; **Wexford** [Edenvale (T0427) [R. Sow]], 2♂♂ 16 July 1902, JJFXK, conf. JPOC (NMI).

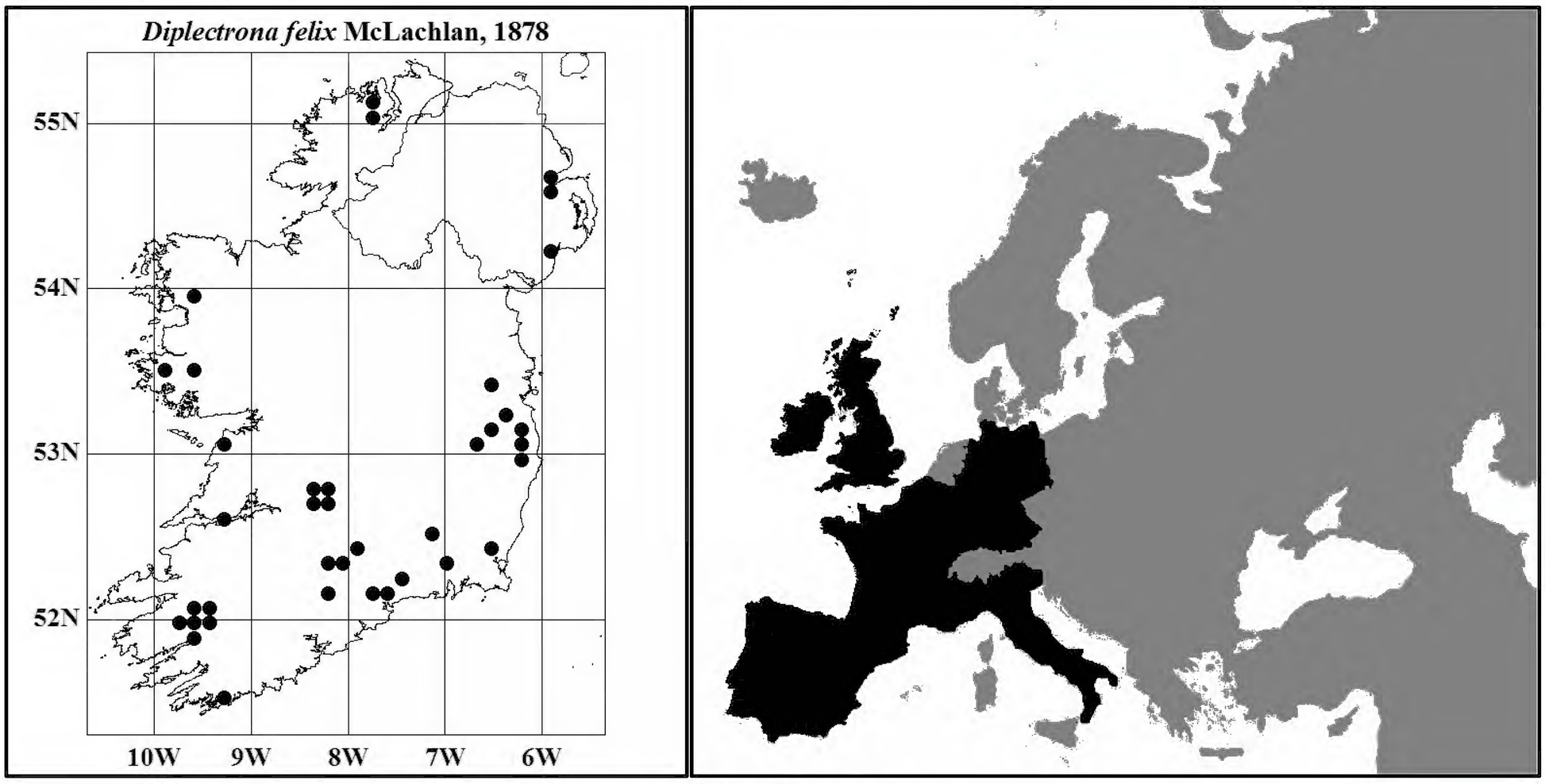
60. *Diplectrona felix* McLachlan, 1878

Diplectrona felix is widely distributed but has not yet been found in central Ireland. The net spinning larvae occur in streams and the upper reaches of small rivers which do not become warm in summer. These are often shaded by woodland. The species has a mainly southern and western European distribution.

Flight period: May–August (22 May–30 August).

Counties and 10km squares: Antrim, Clare, Cork, Donegal, Down, Dublin, Galway, Kerry, Kilkenny, Mayo, Meath, Tipperary, Waterford, Wexford, Wicklow (15/32). The species is known from thirty-eight 10km squares (38/1019).

FIGURES 144-145. Known Irish and European distributions of *Diplectrona felix*.



Published records

McLachlan, 1874-1884 (**IRELAND**). *McLachlan, 1885* (**ANTRIM:** Cave Hill (J3279)). *King, 1888a* (**ANTRIM:** Cave Hill (Belfast) (J3279). **GALWAY:** Ma'am Burn (L9653). **KERRY:** Coppagh Glen (W0382); Gap of Dunloe (V8787); Horses' Glen (V9981); Torc Cascade (V9684). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *King and Halbert, 1910* (**ANTRIM:** Cave Hill (J3279). **DONEGAL:** L. Reelan (C1327). **GALWAY:** Maam R. (L9653). **KERRY:** Coppagh Glen (W0382); Gap of Dunloe (V8787); Horse's Glen (V9981); Torc (V9684). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980b* (**MEATH:** R. Tolka (O0142), north of Dunboyne). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881)). *O'Connor, 1987* (**IRELAND:** widespread). *Bracken, Norton and Phillips, 1991* as *Diplecrona* **(TIPPERARY:** Kilmastulla R.). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (V9890)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 6 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Gammell, 2011* (**WEXFORD:** Artramon Stream, Edenvale (T0427)). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Hancock, 2014* (**DOWN:** Marshes (J3631); R. Burren (J3534)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9617)).

Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), ♂, CGB, det. RMCL, conf. JPOC (BMNH). **CLARE: Cooleabeg** (M1602), stream, Burren, 2 larvae 23 May 1985, JPOC/MAOC, det. JPOC (NMI); **R. Cloon** (R1656), larva 29 August 1973, JPOC. **CORK: L. Ine** [Hyne]

(W0829), inlet stream, larvae 27 January 1983, MJC, det. JPOC; **R. Araglin Catchment** (R8702), larvae, NS & PSG. **DONEGAL: Kilmacrennan** (C1420) [Leannan R.], adult 14 July 1891, [JJFXK] (HMAG), ♀ 18 July 1891, [JJFXK], det. JPOC (HMAG). **DOWN: Newcastle** (J3631), marshes, ♂ 2 August 1912, JJFXK, det. JPOC (HMAG); **R. Burren** (J3534), marsh [near] cemetery, 2 ♂♂ 19 August 1912, JJFXK, det. JPOC (HMAG). **DUBLIN: Bohernabreena** (O0921), stream, 2 larvae 11 June 2015, MAOC/JPOC, det. JPOC. **GALWAY: Connemara National Park** (L7455), Polladirk R., larvae 1991, SV, conf. JPOC. **KERRY: Blue Pool** (V9786), streams, ♂♂♀♀ 30 August 1987, JPOC; **Gap of Dunloe** (V8786), streams, ♂ 10 July 1986, JPOC; **Killarney**, adult 22a July 1887, [JJFXK] (BMNH), ♂ August, [JJFXK], Morton Coll. (NMS), ♂ 16 July & ♂ 14 August 1887, JJFXK, conf. JPOC (NMI), adult July 1940, BPB, det. JRH; **R. Flesk** (W0386), 2 larvae, February 1973, EJW (NMI); **Roughty R.** (V9371), ♂ 4 July 1973, JPOC; **stream** (V9385), at Dinish, 4 larvae & ♂ 31 May 1995, JPOC; **Torc stream** (V9684), ♂ 28 May 1974, JPOC. **KILKENNY: waterfall** (S6437), near Inistioge, 4♂♂3♀♀ 21 July 2015, JPOC/MAOC, det. JPOC (NMI); **Woodstock House** (S6437), Inistioge, ♂ 24 July 1987, JPOC. **TIPPERARY: Glencarra Wood** (S0326), small stream, ♂ 16 August 2000, JPOC. **WATERFORD: Colligan R.** (S2205), stream entering, ♂ 15 August 2000, JPOC; **streams** (S3202), near the Vee, 4♂♂1♀ 20 July 1987, JPOC; **the Comeraghs** (S3411), stream, 2♂♂♀ 13 July 1987, JPOC (NMI). **WEXFORD: J. F. Kennedy Park** (S7219), streams, 2♂♂2♀♀ 7 July 2014, JPOC; **Oaklands Wood** (S7125), stream, ♂ 7 June 1983, 5 larvae & ♂ 29 June 2014, JPOC/MAOC, det. JPOC. **WICKLOW: Brown's Beck Brook** (S9398), at Donard, ♂ 21 June 1973, JPOC; **Devil's Glen** (T2499), ♂ 7 August 1990, JPOC/MAOC, det. JPOC; **Knocksink Woods** (O2117), MT by flush beside woodland, ♂ 30 June-3 July 2005, CR, det. JPOC; **stream** (T2492), at Glenealy, ♂ 22 May 1973, JPOC (NMI); **stream/waterfall** (N9911), near Lacken, ♂ 22 July 1973, JPOC.

61. *Hydropsyche angustipennis* (Curtis, 1834)

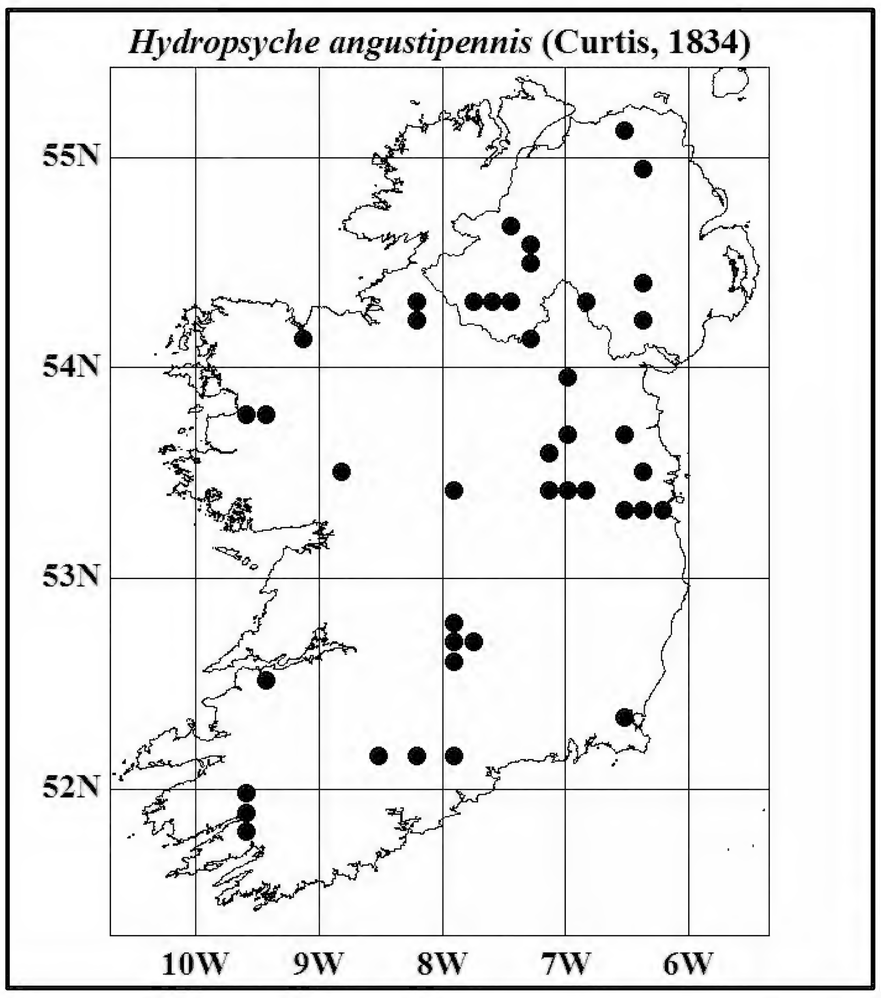
Malicky (2005) gives two subspecies but only ssp. *angustipennis* occurs in Ireland where it is widely distributed. The net-spinning larvae occur in streams and rivers (Fig. 148). These can be the outlets of standing water such as lakes. They are tolerant of warm and slightly polluted conditions and in these circumstances can occur in large numbers. The Broadmeadow River below Ashbourne, County Meath, is one such suitable habitat which has been affected by sewage. Badcock (1953) observed a female of the species diving into the water to lay her eggs under a stone in a stream. The adults of some Irish populations have an open median cell in the hind wing. The species is widespread in Europe but unrecorded from the Iberian Peninsula.

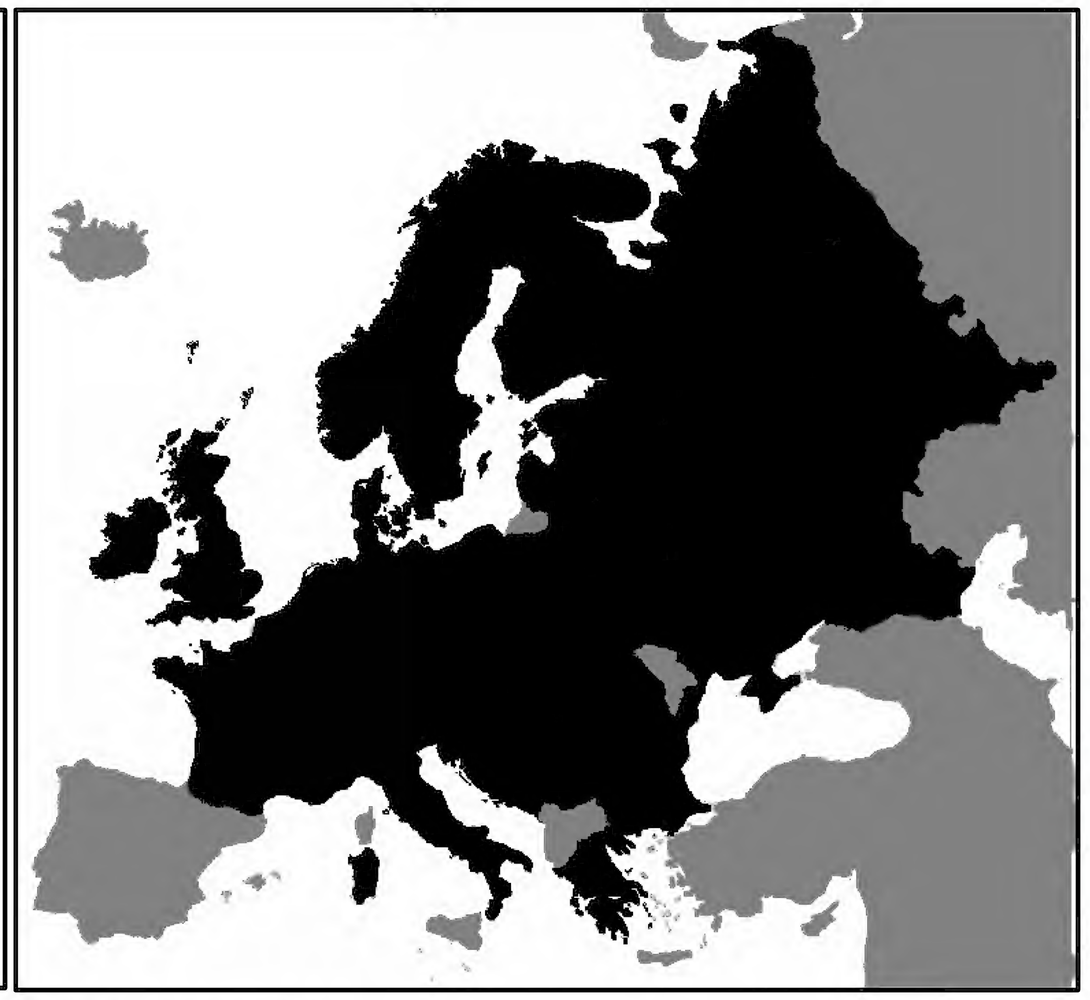
Flight period: June–September (6 June–1 September). Barnard and Ross (2012) give the British flight period as (April) May–September.

Counties and 10km squares: Antrim, Armagh, Cavan, Cork, Down, Dublin,

Fermanagh, Galway, Kerry, Kildare, Leitrim, Mayo, Meath, Offaly, Tipperary, Tyrone, Waterford, Westmeath, Wexford (19/32). The species is known from forty-two 10km squares (42/1019).

FIGURES 146-147. Known Irish and European distributions of *Hydropsyche angustipennis*.



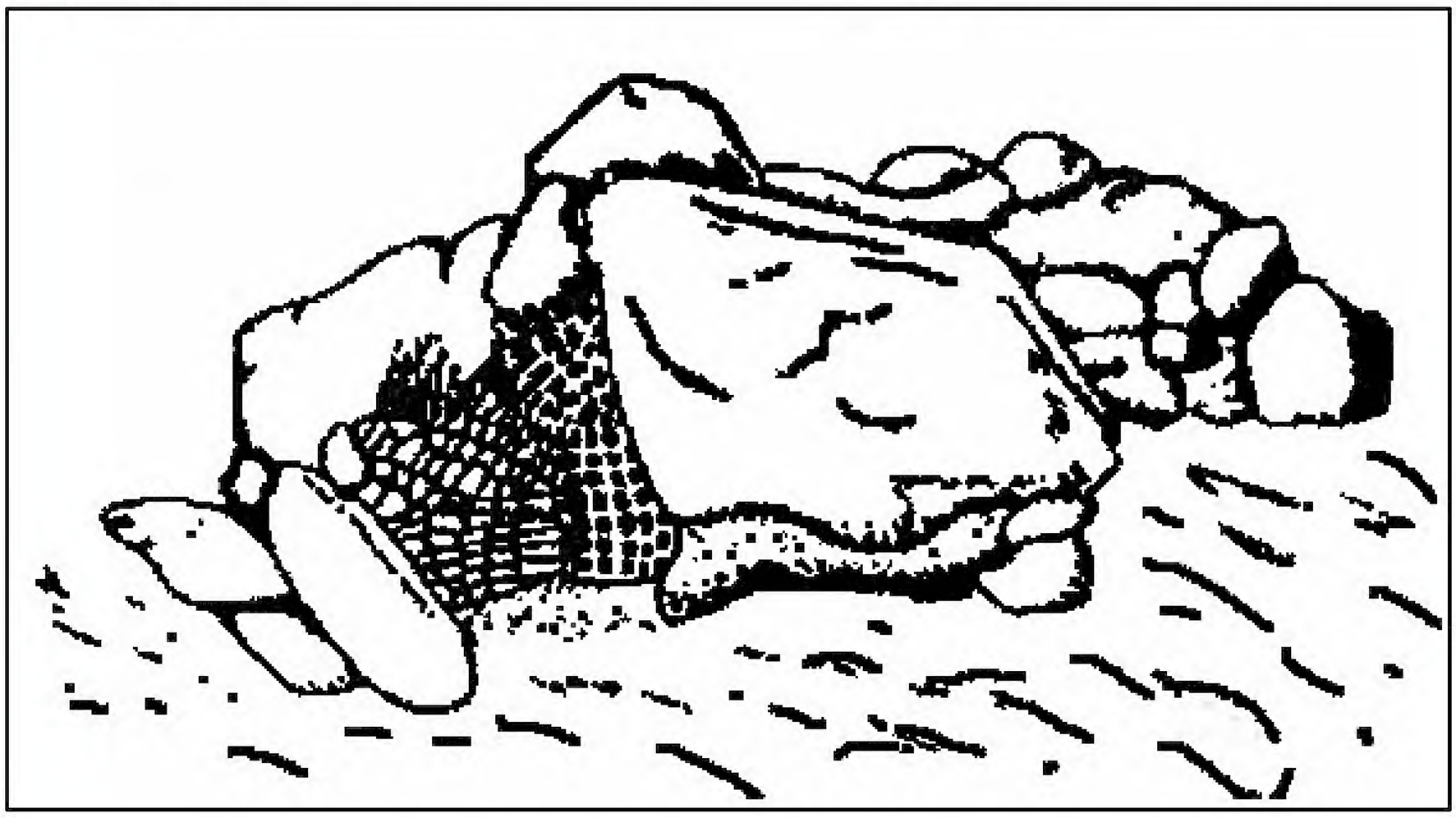


Published records

King, 1888a (**MAYO:** Knappagh [Knappaghbeg] (M0080) and Mount Brown [Kinlooey] (M0381) Laoghs. **WATERFORD:** near Lismore (X0498). **WESTMEATH:** Twy [Breensford] R. (N0943)). *King and Halbert, 1910* (**KERRY:** near Kenmare (V9471). **MAYO:** Knappagh [Knappaghbeg] (M0080) and Mount Brown [Kinlooey] (M0381) Loughs. **WATERFORD:** near Lismore (X0498). **WESTMEATH:** Twy [Breensford] R. (N0943)). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Frost, 1939* (unsafe larval identification). *Frost, 1942* (unsafe larval identification). *Fahy, 1972b* (unsafe larval identification). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**IRELAND:** widespread). *Twomey and Giller, 1991* (**CORK:** tributary of R. Araglin (R8702)). *Giller and Twomey, 1993* (**CORK:** Glenfinnish R. (R8702); R. Awbeg (R6804)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 12 out of 70 sampled sites). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 30 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** R. Galey (R0139)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** R. Bush (C9436); R. Main (Killagan Water) (D0513). **ARMAGH:** R. Cusher (J0350). **DOWN:** Newry R. (J0730). **FERMANAGH:** Lisblake Burn (H1637), (H3744); R. Boho (H1344); R. Colebrooke (H3744); R. Finn (H4220); R. Sillees (H2341). **TYRONE:** Eskragh Water (Quiggery Water) (H4763); Fairywater (H3976); R. Blackwater (H7544); Quiggery Water (H4467)). *Anon., 2015a* (**CORK:** Glengarriff Nature Reserve

(V9157). **DUBLIN:** Liffey Valley Park, Waterstown (O0835). **KERRY:** Killarney National Park (V9684)).

FIGURE 148. The larval net of a *Hydropsyche* species (after Moss, 2010).



Unpublished records and voucher specimens

CAVAN: R. Annalee (H7205), below L. Sillan, ♂ 10 August 1972, JPOC. **CORK: R. Araglin** (R8703), larvae 1988-1990, NS. **DUBLIN: R. Dodder** (O1730), Clonskea [Clonskeagh], adults 6 June/1 September 1945, 25 August 1947, JRH; **Rye Water** (O0036), ♂ 25 June 1973, JPOC. **GALWAY: R. Clare** (M4149), 45 larvae 3 September 1980, LW, conf. JPOC (NMI). **KERRY: R. Galey** (R0139), 2♂♂ LT 28-29 August 1973, open median cell in hind wing, JPOC (NMI). **KILDARE: Louisa Bridge** (N9936), ♂ 22 August 1982, JPOC/MAOC, det. JPOC (NMI); **R. Boyne** (N6643), larvae April 1990, DAG/JML, det. JML. **LEITRIM: Bonet R.** (G8534), larvae 24 June 1991, (G8231), larvae 24 June 1991, (G8741), larvae 25 June 1991, DAG/JML, det. JML. **MAYO: R. Moy** (G2418), Ballina, adult 12 July 1945, JRH. **MEATH: Broadmeadow R.** (O0652), downstream of Ashbourne, sewage u/s, 50 larvae 2 November 1972, AFF, det. JPOC; **R. Blackwater** (N7739), Enfield, adult 14 June 1947, JRH; **R. Boyne** (N9673), larvae July 1989, (N9972), larvae July 1989, (O0272), larvae July 1989, DAG/JML, det. JML; **Trimblestown R.** (N6967), larvae July 1991, DAG/JML, det. JML. **OFFALY: Yellow R.** (N5337), larvae June 1989, (N5838), larvae June 1989, (N5937), larvae June 1989, DAG/JML, det. JML. **TIPPERARY: Breagagh R.** (S1458), larvae 10 March 1992, DAG/JML, det. JML; **Brownstown R.** (S1665), larvae 10 March 1992, DAG/JML, det. JML; (S1957) larvae 10 March & 6 July 1992, DAG/JML, det. JML; **R. Clover** (S1959), larvae 5 September 1991, 10 March & 6 July 1992, DAG/JML, det. JML; **R. Drish** (S2163), larvae 10 March 1992, (S1961), larvae 10 March & 6 July 1992, (S1759), larvae 10 March & 6 July 1992, DAG/JML, det. JML; **R. Suir** (S1267), larvae 19 September

1991 & 22 May 1992, (S1362), larvae 19 September 1991 & 22 May 1992, (S1258), larvae 19 September 1991 & 22 May 1992, (S1255), larvae 22 May 1992, DAG/JML, det. JML. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂♂ 20 August 1888, JJFXK (♂ conf. JPOC) (BMNH, NMS), 7♂♂ 20a August 1888, JJFXK, conf. JPOC (NMI); **R. Deel** (N5565), larvae September 1989, DAG/JML, det. JML. **WEXFORD: near Whitestown** (T0517), stream, 2 larvae 2 July 2014, JPOC/MAOC, det. JPOC.

[*Hydropsyche bulgaromanorum* Malicky, 1977

The extant voucher specimens of *Hydropsyche guttata* Pictet, 1834 (a synonym of *Hydropsyche bulgaromanorum*), from Ireland, were misidentified and instead belong to *H. contubernalis*.

Published records

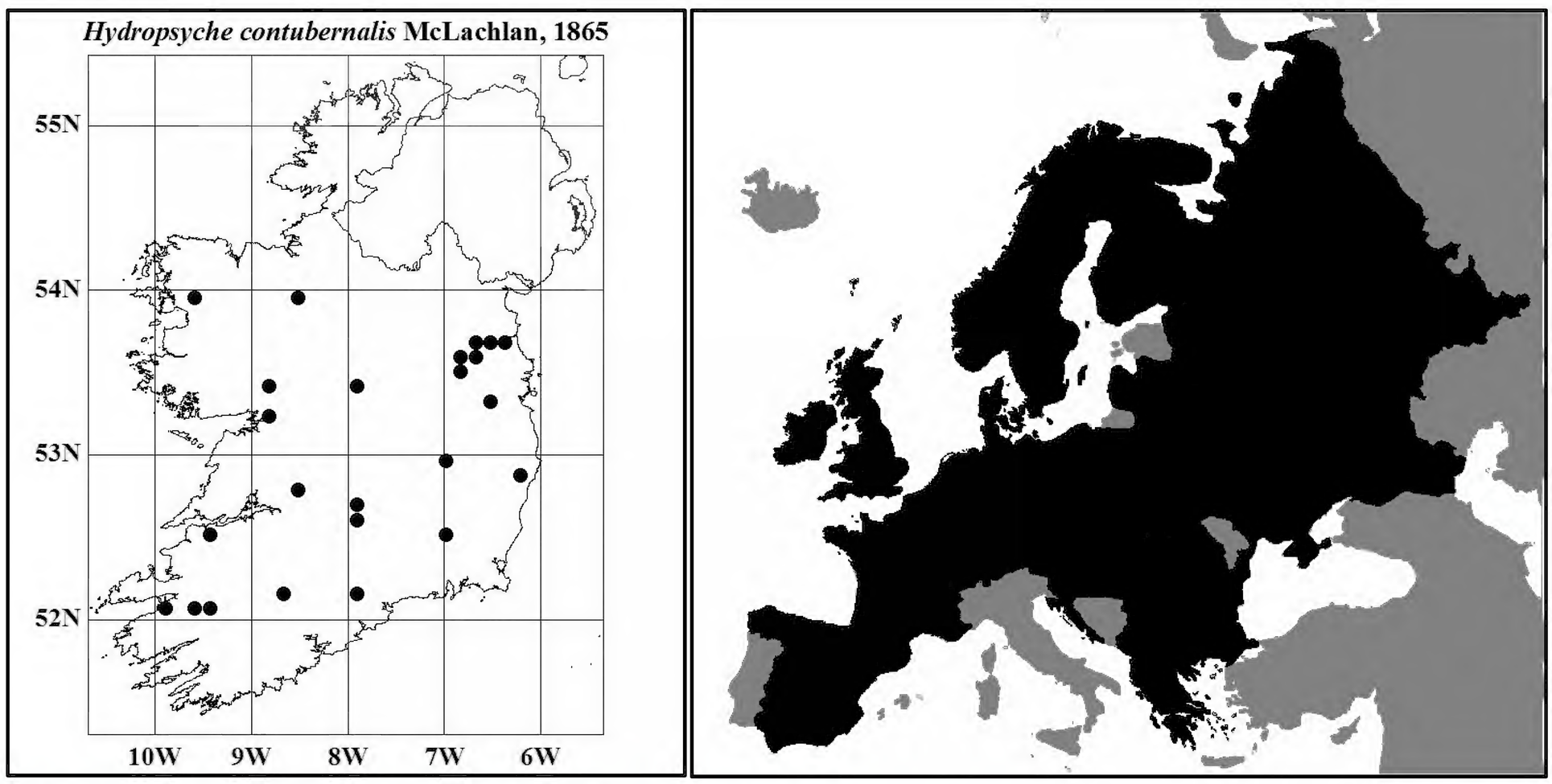
King, 1888a as *Hydropsyche guttata* (WESTMEATH: Shannon [misidentification]). *King and Halbert, 1910* as *Hydropsyche guttata* (CORK: Mallow [R. Blackwater] [misidentification]. WESTMEATH: Shannon [misidentification]). *O'Connor, 1978a* (An examination of Irish specimens...housed in the National Museum, has revealed that none...belong to this species); *O'Connor and Nelson, 2012* as *Hydropsyche guttata* (listed as a misidentification).

Unpublished records and voucher specimens

The eight voucher specimens in NMI from Athlone [R. Shannon] (♂ no date, 3♂♂ 5 July & ♂ 9 July 1888, JJFXK), Co. Westmeath and Mallow (W5598) (3♂♂), Co. Cork, have been re-identified by JPOC as *Hydropsyche contubernalis*.]

62. *Hydropsyche contubernalis* McLachlan, 1865

FIGURES 149-150. Known Irish and European distributions of *Hydropsyche contubernalis*.



Malicky (2005) gives four subspecies but only ssp. *contubernalis* occurs in Ireland where it is widely distributed. However as yet, there are no records from the north of

the island. The net-spinning larvae occur in rivers. The species is widespread in Europe.

Flight period: May–September (10 May–5 September).

Counties and 10km squares: Carlow, Clare, Cork, Dublin, Galway, Kerry, Kildare, Mayo, Meath, Roscommon, Sligo, Tipperary, Waterford, Westmeath, Wicklow (15/32). The species is known from twenty-four 10km squares (24/1019).

Published records

Beirne and Harris, 1946 as *Hydropsyche ornatula* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7192)). *O'Connor, 1987* (**IRELAND:** widespread but local). *Ashe, 1995* (**KERRY:** R. Flesk). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune, the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 3 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** river). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**DUBLIN**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**SLIGO:** L. Gara (M7099)). *O'Connor, 2013b* (**KERRY:** R. Galey (R0139)).

Unpublished records and voucher specimens

CARLOW: Bahana Woods (S7239), ♂ 14 June 1991, JPOC/MAOC, det. JPOC. **CLARE: Killaloe** (R7072), adult 16 June 1913, CJM, det. JRAG (IM) (per IDW). **CORK: Mallow** (W5598) [R. Blackwater], 3♂♂ (misidentified as *Hydropsyche guttata*), conf./det. JPOC (NMI). **DUBLIN: R. Liffey** (O0335), Lucan, adult 10 May 1945, JRH. **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva 15 April 1984, PB, det. JPOC; **R. Clare** (M4242), larva 3 September 1980, LW, conf. JPOC (NMI). **KERRY: R. Galey** (R0139), LT 7♂♂ 28-29 August 1973, JPOC (NMI); **R. Laune** (V8991), ♂♂ 5 September 1972 (NMI), 4♂♂♀ 24 August 1973 (NMI), JPOC, (V8892), 2 larvae May 1972, EJW, det. JPOC (NMI). **KILDARE: R. Barrow** (S6892), near Athy, 34 larvae 2 December 2008, PS. **MEATH: R. Blackwater** (N8668), Navan, adult 23 May 1947, JRH, (N8668), larvae 5 September 1988, DAG/JML, det. JML; **R. Boyne** (N8865), 2♂♂ 30 May 1986, JPOC, (N9574), Slane, ♂ 4 June 1977 (NMI), IFT, det. JPOC, (O0373), Donore, adult 13 May 1946, JRH, (N8660), Bective, 8 larvae 5 September 1988, (N9070), Dunmore Castle, larva 5 September 1988, (N8056), near Trim, 52 larvae 5 September 1988, (N8768), The Mollies, ♂♂ 24 May 1988, MFOG, det. JPOC, larva 9 September 1988, MFOG, det. JPOC, (N8057), larvae 5 September 1988, (N8659), larvae 5 September 1988, (N9673), larvae July 1989, (O0476), larvae July 1989, DAG/JML, det. JML. **ROSCOMMON: R. Shannon** (N0243), Athlone, 2♂♂ July 1981, C. Carter, det. M. I. Crichton (NMI). **TIPPERARY: R. Suir** (S0854), Holycross, ♂3♀♀, S. Buckley, det. JPOC; **Thurles** (S1258), 2 pupae in trout stomach, 12 May 1981, S. Buckley, det. JPOC (NMI). **WATERFORD: R. Blackwater** (X0498), Lismore, ♂ 20 May 1997, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂♂ 5-7a July, 12a July, 20b

July & 24 July 1888, [JJFXK], conf. JPOC (BMNH, NMS) (one 20b July 1888 misidentified as *Hydropsyche instabilis* in BMNH), 3♂♂ 5 July 1888 (misidentified as *Hydropsyche guttata*), ♂ 9 July 1888 (misidentified as *Hydropsyche guttata*), JJFXK, det. JPOC (NMI), ♂ 20 August 1958, PHW, det. PHW and D. E. Kimmins, conf. JPOC (BMNH). **WICKLOW: Avondale** (T1986) [R. Avoca], ♂♂ 27 May 1988, JPOC (NMI).

[*Hydropsyche fulvipes* (Curtis, 1834)

Earlier published Irish records of *Hydropsyche fulvipes* using Edington and Hildrew (1981) were considered unreliable because the larva of *H. saxonica* were not keyed out and it was impossible therefore to separate the two similar-looking species using it. In addition, the larva of *H. exocellata* Dufour, 1841 was not described in that work. These two species appeared in the next edition (Edington and Hildrew, 1995) and as a result, O'Connor (2010) added *H. fulvipes* to the Irish list based on larvae identified with it. At the time, this appeared to be a logical approach using a British Isles key despite the lack of adults. It is considered highly unlikely that there is an overlooked *Hydropsyche* species in Ireland which has not been found in Great Britain (Malicky, pers. comm.). While O'Connor (2010) was in press, Statzner and Mondy (2009) published a paper on the variation of colour patterns on the frontoclypeus of larval Hydropsychidae and discussed the implications for species identifications. Edington and Hildrew (1995) separated the larvae of *H. instabilis* and those of *H. fulvipes* and *H. saxonica* based on these frontoclypeal patterns. The aboral and lateral marks of *H. instabilis* were stated to be separate while those of the two other species were said to be joined to form a continuous sinuate figure. However, Statzner and Mondy (*op. cit.*) showed that both these patterns were within the colour pattern range of *H. instabilis*. The separation couplet is not therefore reliable in Edington and Hildrew (1995), and specimens determined with it as either *H. fulvipes* or *H. saxonica* may be actually *H. instabilis* (Figs 151-152).

In 2014, larvae were collected from a stream in Killoughrim Forest, County Wexford, and these were identified as *H. fulvipes* using Edington and Hildrew (1995). *H. instabilis* was also present. A male pupa which was found with larval sclerites including a frontoclypeus with the *fulvipes* pattern was sent to Hans Malicky for his opinion. He identified the specimen as *H. instabilis*. Light-traps run at the site have only attracted large numbers of the adults of *H. instabilis*.

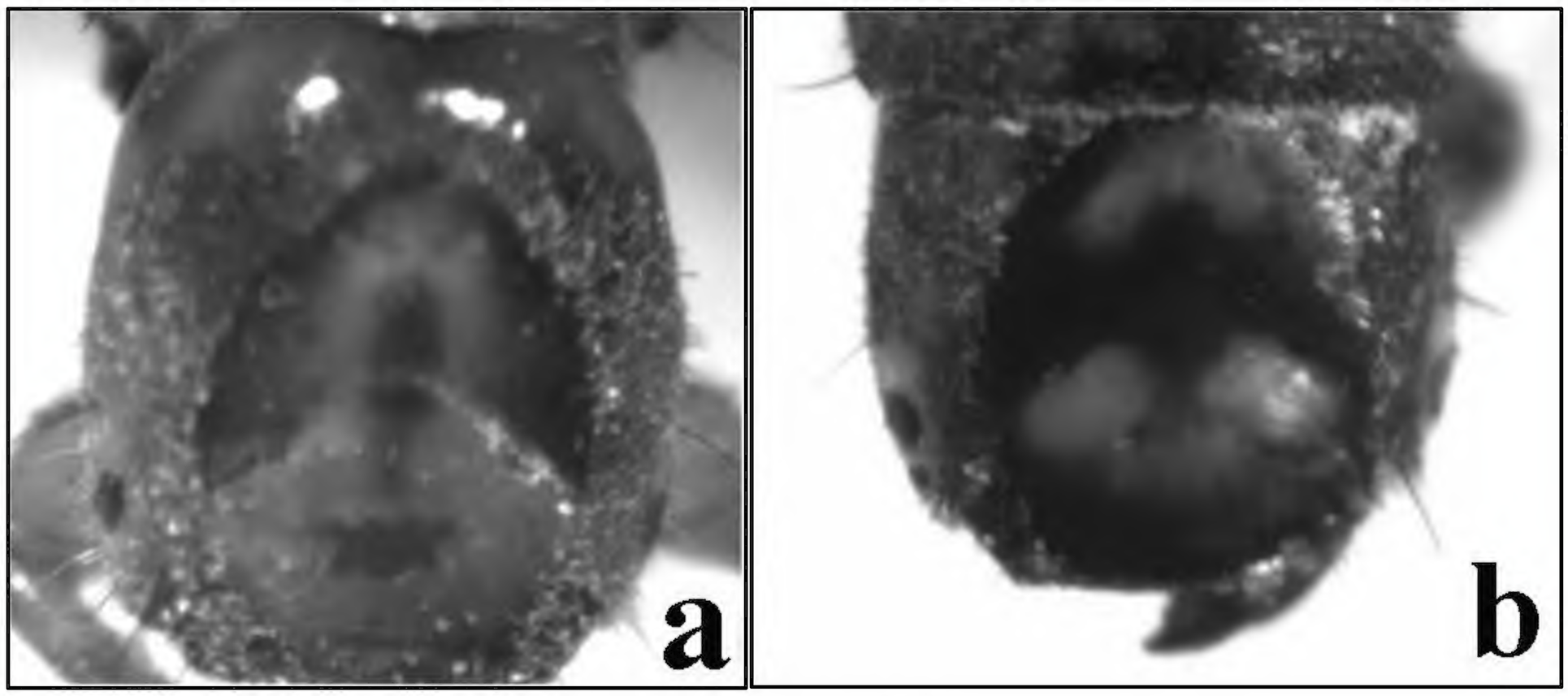
O'Connor (2010) recorded both *H. fulvipes* and *H. saxonica* from the Araglin River system, County Cork based on larvae collected by Paul Giller and his students. This river also contains a large population of *H. instabilis*. Waringer and Graf (2011) use the width of the frontoclypeus to separate the larvae of *H. instabilis* from those of the other two species. It is widest in the middle for *H. instabilis* while widest at the anterior margin for *H. fulvipes* and *H. saxonica*. While these features would be easy to observe on a frontoclypeus from a cast larval skin, they are difficult to discern on

whole larvae. Nevertheless, the larvae of *H. fulvipes* and *H. saxonica* have now been redetermined as *H. instabilis* using Waringer and Graf (2011). Similarly, other larvae named by the author as *H. fulvipes* have proved to be *H. instabilis*. As a result, both species have been deleted from the Irish list until definite pupal or adult material is found. Waringer and Graf (2011) use the presence or absence of a continuous transverse step on the frontocylpeus to separate *H. fulvipes* and *H. saxonica.* It is interesting to note therefore that the transverse step is highly variable in *H. instabilis* from complete to incomplete.

Hans Malicky kindly provided male specimens of *H. fulvipes* for comparative purposes. Because of their distinctive brown wings, it is evident that *H. fulvipes* have not been overlooked by the author while examining collections of Irish *Hydropsyche* adults.

FIGURE 151. *Hydropsyche instabilis* with the colouration of *H. fulvipes* from the Araglin River system, County Cork. The colour has faded after 25 years in spirit.

FIGURE 152. *Hydropsyche instabilis* (a) from Killoughrim Forest, County Wexford and (b) from a stream at Pollfur Bridge near Fethard, County Wexford.



Published records

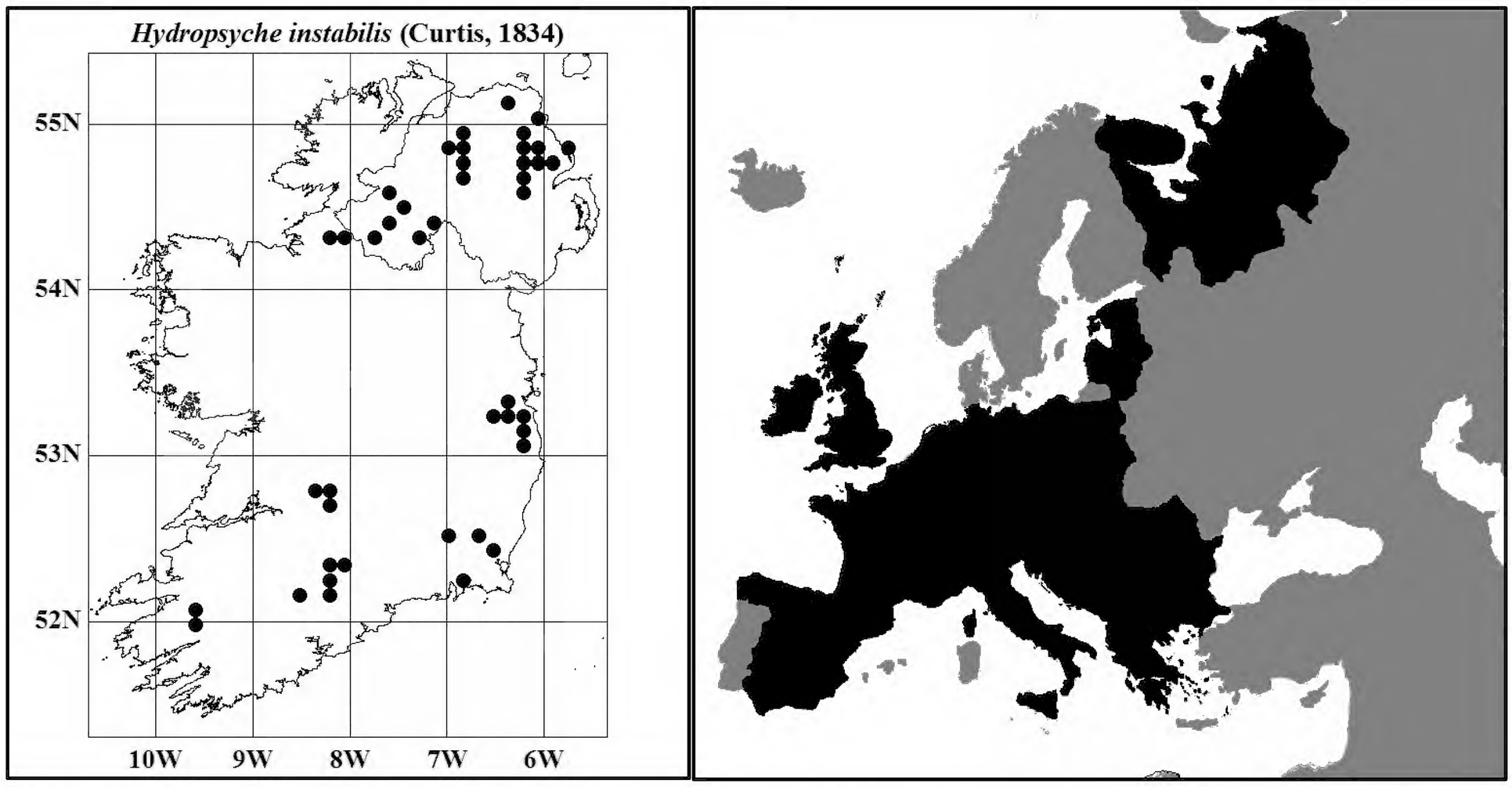
Bracken, Norton and Phillips, 1991 as *Hydropsyche fulcipes* (unsafe larval identification by Helen Phillips using Edington and Hildrew (1981) and no voucher specimens were retained. The species was not found during the first Kilmastulla survey by Mary O'Connor [Norton] from 1976-1977). *Twomey and Giller, 1991* (unsafe larval identification using Edington and Hildrew (1981)). *O'Connor, 2010* (unsafe larval identification using Edington and Hildrew (1995)). *Gammell, 2011* (unsafe larval identification). *O'Connor and Nelson, 2012* (CORK). *Barnard and Ross, 2012* (IRELAND)]

63. *Hydropsyche instabilis* (Curtis, 1834)

Curtis (1836b) recorded the species from three Irish sites but Neboiss (1963) showed that the ten specimens in the Curtis cabinet in the National Museum of Victoria under *Hydropsyche instabilis* were not conspecific. Two were *H. pellucidula* and the sole specimen selected by Neboiss as type material is from Southgate [England]. Therefore, these old Irish records are not acceptable. The records in King and Halbert (1910) are misidentifications and refer to *H. siltalai*. The true *H. instabilis* was subsequently discovered in Counties Dublin and Wicklow (O'Connor and Bracken, 1978). The species has yet to be discovered in the west of Ireland due to under-recording. An aberrant male, with an unusually shaped aedaegus was taken in County Carlow (Figs 155-158). The net-spinning larvae inhabit streams and small rivers. In the Glenfinnish River, County Cork, five larval instars were identified. The majority of individuals overwintered in instar IV. Development to instar V was complete by early spring. The species was clearly univoltine with distinct year classes (Sangpradub, Giller and O'Connor, 1999). Due to the variation in larval frontoclypeal patterns, the species may be misidentified as either *H. fulvipes* or *H. saxonica* using Edington and Hildrew (1995) [see discussion above under *H. fulvipes*]. *H. instabilis* is

widespread in much of Europe but not known from most of Scandinavia.

FIGURES 153-154. Known Irish and European distributions of *Hydropsyche instabilis*.



Flight period: July–August (22 July–7 August). There are few Irish adult records so the flight period may be longer than above. Barnard and Ross give the British flight period as (April), May–August).

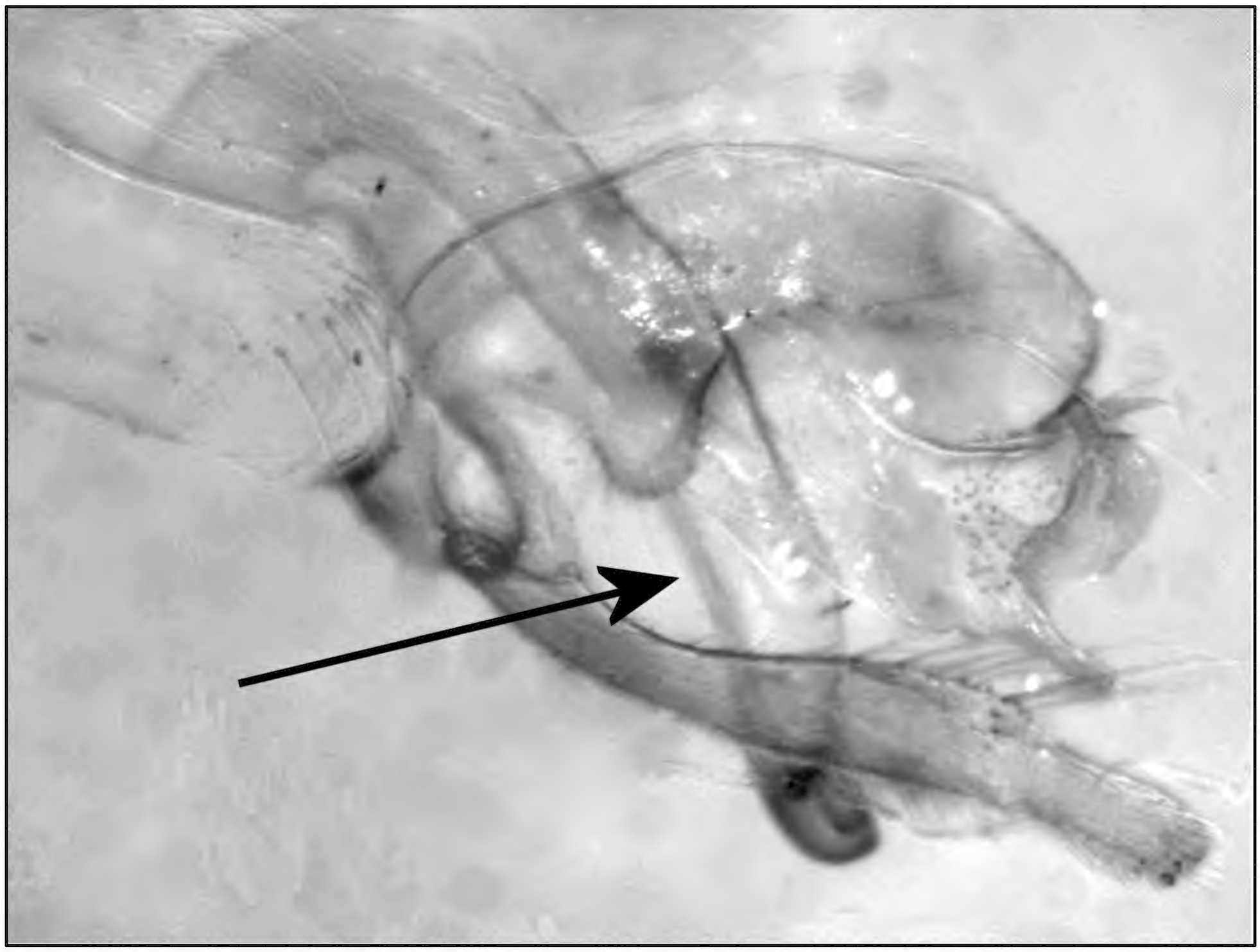
Counties and 10km squares: Antrim, Carlow, Cork, Derry, Dublin, Fermanagh, Kerry, Leitrim, Tipperary, Tyrone, Wexford, Wicklow (12/32). The species is known from forty-four 10km squares (44/1019).

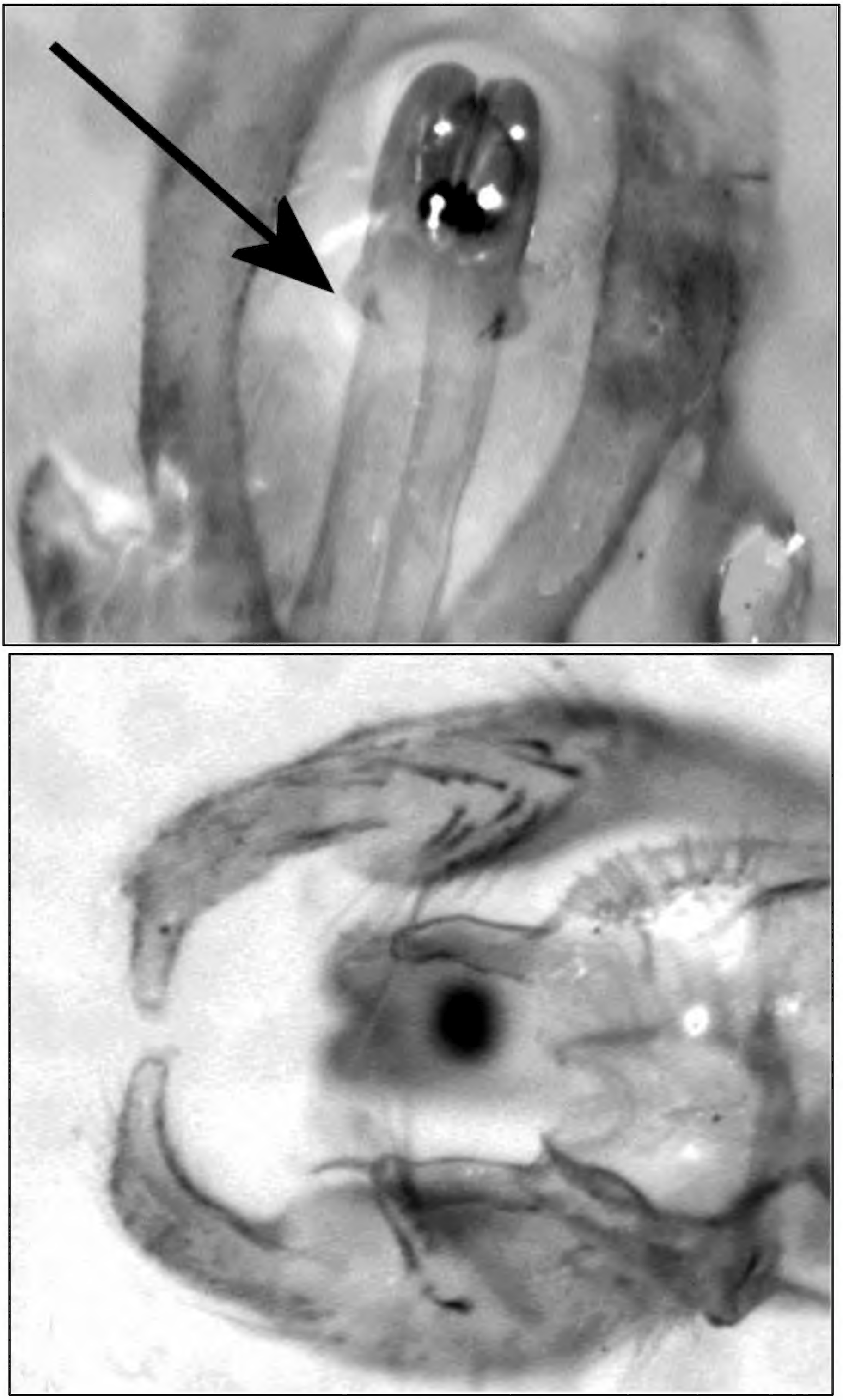
Published records

[*Curtis, 1836b* (**CLARE:** Loch [Lough] Derg. **CORK:** Glengariff [Glengarriff]. **GALWAY:** Galway). These old records are unacceptable]. *O'Connor and Bracken, 1978* (**DUBLIN:** stream (O1920). **WICKLOW:** Bray R. (O2417); Glencullen R. (O1919)). *O'Connor, 1987* (**DUBLIN**. **WICKLOW**). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1325), (O1326), (O1327), (O1427)). *Twomey and Giller, 1991* (**CORK:** tributary of R. Araglin (R8702)). *Bracken, Norton and Phillips, 1991* (**TIPPERARY:** Kilmastulla R.). *Giller and Twomey, 1993* (**CORK:** Glenfinnish R. (R8702); R. Awbeg (R6804)). *Sangpradub and Giller, 1994* (**CORK:** Glenfinnish R.). *Carter and Wood, 1995* (**ANTRIM:** Clogh R. [indicative D1616]). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Wright et al., 2000* (**NORTHERN IRELAND:** 9 out of 70 sampled sites). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 49 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Gammell, 2011* (**WEXFORD:** Crory Lower Stream, Edenvale (T0327)). *O'Connor and Nelson, 2012* (**DUBLIN**. **WICKLOW**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Cashel Burn (D1706); Crew Burn (J1370); Doagh R.

tributary (J2593); Douglas Burn (J2299); Glenariff R. (D2221); Glynn R. (J4099); Legnagooly Burn (D1312); R. Bush (D0729); R. Clady (Clady Water) (J1984); Ross Burn (J1597); Six Mile Water (J3195). **DERRY (LONDONDERRY):** R. Agivey (C7912); R. Douglas (H7796); R. Owenalena (C7406); R. Owenrigh (C6606). **FERMANAGH:** Cooneen Water (H4539); Foxhill Burn (H2752); R. Arney (H1737); R. Black (H0143); R. Lack (H2566). **TYRONE:** Black Water (H2974); Fury R. (H5551); Lissan Water (H8081); R. Coolaghty (H2567); R. Owenreagh (H3365)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8467), (R8667), (R8168); R. Tar (R9419), (R9019), (R8919), (R9117), (R9416)).

FIGURES 155-158. Aberrant male of *Hydropsyche instabilis*, with an unusually shaped aedaegus, collected by JPOC/MAOC near a stream at Saint Mullins, County Carlow and identified by Hans Malicky.



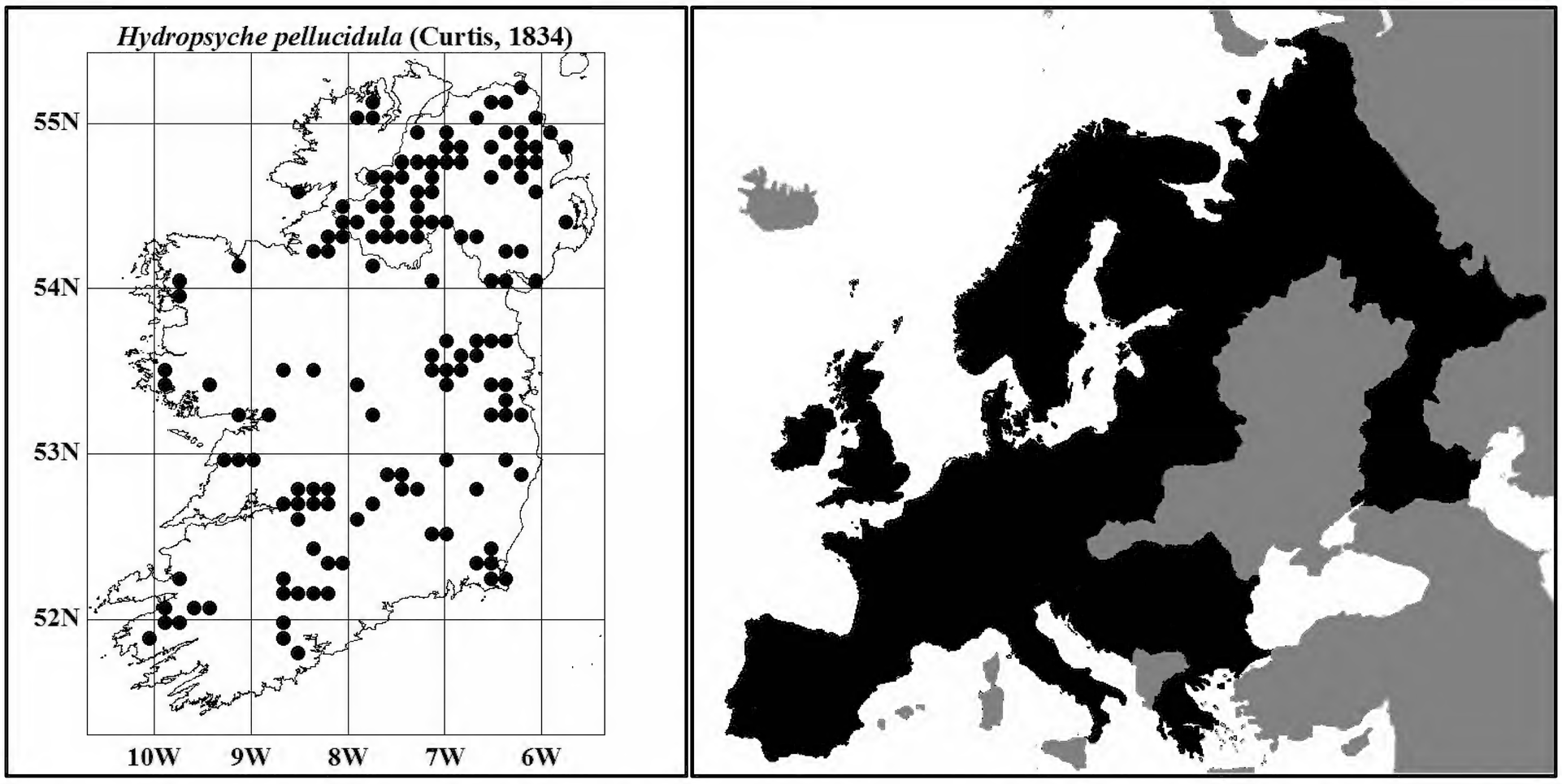


Unpublished records and voucher specimens

CARLOW: St Mullins (S7238), stream, 7 larvae 5 July 2014, MAOC/JPOC, det. JPOC, also aberrant ♂ same date, det. H. Malicky (NMI). **CORK: R. Araglin** (R8703), larvae 1988-1990, NS. **DUBLIN: Glencullen R.** (O1919), larva 27 September 1977, JPOC. **KERRY: O'Sullivan's Cascade**, Killarney (V9188), larva October 1971, EJW, det. JPOC (NMI); **Torc Cascade** (V9684), Killarney, larva October 1971, EJW, det. JPOC (NMI). **LEITRIM: Bonet R.** (G8444), larvae 25 June 1991, DAG/JML, det. JML; **Owenmore R.** (G8839), larvae 26 March 1991, (G8839), larvae 26 March 1991, DAG/JML, det. JML. **WEXFORD: Killoughrim Forest** (S9041), stream, larvae 3 July 2014, JPOC/MAOC, det. JPOC, ♂ pupa 3 July 2014, JPOC/MAOC, det. H. Malicky (NMI), LTS 6♂♂32♀♀ 28 July 2015, JPOC/MAOC, det. JPOC (NMI); **stream** (S7806), Pollfur Bridge near Fethard, 5 larvae & 2♂♂ pupae 30 June 2014, MAOC/JPOC, det. JPOC (NMI). **WICKLOW: Devil's Glen** (T2499), ♂ 7 August 1990, JPOC; **Owendore Stream** (O1326), 11 larvae, M. Kelly Quinn, det. JPOC, also 4 pupae, det. JPOC (NMI); **Powerscourt Waterfall** (O1912), larva April 1990, D. Tierney (misidentified as *H. fulvipes*), det. JPOC (NMI); **R. Glencullen** (O1919), 2♂♂ 22 July 1973, JPOC (NMI); **Slade of Saggart** (O0324), 2♂♂ 7 August 1981, JPOC; **stream** (O1920), two 4th instar larvae, 26 September 1977, JPOC, conf. P. J. Boon (NMI).

64. *Hydropsyche pellucidula* (Curtis, 1834)

FIGURES 159-160. Known Irish and European distributions of *Hydropsyche pellucidula*.



Hydropsyche pellucidula is widespread in Ireland. The net-spinning larvae inhabit streams and rivers. The species is widely distributed in Europe including the Iberian Peninsula where genetic analyses showed that it was widespread (Múrria *et al.*, 2010).

Flight period: May–September (13 May–13 September).

Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Laois, Leitrim, Limerick, Louth, Mayo, Meath, Offaly, Roscommon, Tipperary, Tyrone, Westmeath, Wexford, Wicklow (28/32). The species is known from 141 10km squares (141/1019).

Published records

Curtis, 1836b as *Hydropsyche hibernica* (**GALWAY:** Roundstone (L7138)). *Stephens, 1836* (**IRELAND**). *Stephens, 1836* as *Hydropsyche hibernica* (**GALWAY:** Roundstone in Connemara (L7138)). *King, 1888a* (**GALWAY:** Salthill (M2924). **KERRY:** Cloghereen (V9787), Denough [Deenagh] R. (V9792). **WESTMEATH:** Shannon (N0341)). *King and Halbert, 1910* (**DONEGAL:** Cottian (C1318) [Leannan R.]; Gorteen (C0818), Irvine's (C1322), Reelan (C1327) and Sproule's (C1018) Loughs; Largy (G6675) and Lennan [Leannan] (C1521) Rivers (C1318). **GALWAY:** Salthill (M2924). **KERRY:** Cloghereen (V9787) and Deenagh Rivers (V9792). **WESTMEATH:** Shannon (N0341)). *Neboiss, 1963* (**GALWAY:** Roundstone [L7138]). *Fahy, 1972b* (unsafe larval identification). *Boon, 1978* (**KERRY**). *O'Connor, 1978b* (**KERRY:** R. Caragh (V7192)). *O'Connor and Bracken, 1978* (**WICKLOW:** Glencullen R. (O1919)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980b* (**DUBLIN:** R. Tolka (O0640), Mulhuddard Bridge. **MEATH**: R. Tolka (O0142), north of Dunboyne, (O0241), bridge upstream of Dunboyne tributary). *Dowling, O'Connor and O'Grady, 1981*

(**KERRY:** R. Caragh (V7881), (V7480), (V7281), (V7192)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990)). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1325), (O1326), (O1327)). *Bracken, Norton and Phillips, 1991* as *Hydropsyche pellucida* (**TIPPERARY:** Kilmastulla R.). *Twomey and Giller, 1991* (**CORK:** tributary of R. Araglin (R8702)). *Kelly-Quinn, 1991* (**WICKLOW:** Glenealo R. (T1196)). *O'Grady and King, 1992* as *Hydropsyche pellucida* (**MAYO:** Bunree R. (G3118)). *Giller and Twomey, 1993* as *Hydropsyche pellucida* (**CORK:** R. Awbeg (R6804); Glenfinnish R. (R8702)). *Ashe, 1995* (**KERRY:** R. Flesk). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 50 out of 70 sampled sites). *White and Irvine, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune (V8991), the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 145 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Anon., 2009b* (**LAOIS:** R. Erkina (S2878)). *Anon., 2011* (**WEXFORD:** Ballyfinoge Stream (T0414); Ballyvalloge Stream (S9823); Tinnokilla Stream (S9729); R. Sow (T0331)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); L. Derriana stream (V6274)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Coopers Water (J2175); Doagh R. (J2693); Doagh R. tributary (J2593); Douglas Burn (J2299); Dunnstown Burn (D0409); Glenariff R. (D2221); Glynn R. (J4099); Granagh Burn (H6072); Kellswater (J1698); Legnagooly Burn (D1312); R. Blackwater (H7544); R. Bush (C9436); R. Clady (Clady Water) (J1984), (C9603); R. Clogh (D0613); R. Dervock (D0233); R. Glenarm (D3114); R. Glenshesk (D1240); R. Main (J0889); Ross Burn (J1597). **ARMAGH:** Forkhill R. (J0115); Kilnasaggart (R.) (J0615); R. Callan (H8539). **DERRY (LONDONDERRY):** R. Aghadowey (C8722); R. Ballinderry (H9279); R. Douglas (H7796); R. Faughan (C4713); R. Mayoghill (C8819); R. Owenalena (C7406); R. Owenbeg (C6809); R. Owenrigh (C6606); R. Roe (C7506). **DOWN:** Cassy Water (J2314); Newry R. (J0730); R. Annacloy (J4448); Upper Bann (J2129). **FERMANAGH:** Cooneen Water (H4539); Foxhill Burn (H2752); Lisblake Burn (H1637); Lisnabane Burn (H3744); R. Arney (H1737); R. Ballinamallard (H2853); R. Bannagh (H1665); R. Black (H0143); R. Colebrooke (H3744); R. Garvary (H0063); R. Glendurragh (H2265); R. Lack (H2566); R. Roogagh (Glen R.) (G9451); R. Sillees (H1152). **TYRONE:** Ballygawley R. (Ballygawley Water) (H6353); Ballynahatty Water (R. Owenreagh) (H4367); Black Water (H2974); Eskragh Water (Quiggery Water) (H4763); Fairywater (H3976); Fury R. (H5551); Glashagh Burn (H6180); Granagh Burn (H6072); Oughtmame Burn (H6293); R. Blackwater (H7544), (H6253); R. Camowen (H4673); R. Cleen (H4748); R. Cloghfin (H5170); R. Derg (H1980), (H3184); R. Glenelly (H5691); R. Owenkillew (H4387), (H6184); R. Owenreagh (H5882); R. Strule (H4186); Quiggery Water (H4467); Tullynadall Burn (H4490)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa

(R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Anon., 2015a* (**CLARE:** Dromore Nature Resrve (R3586). **DUBLIN:** Liffey Valley Park, Waterstown (O0835). **MAYO:** Ballycroy National Park (F8314). **OFFALY:** stream at Tumduff Mor (N1917). **WICKLOW:** Wicklow Mountains National Park (T1196)).

Unpublished records and voucher specimens

CARLOW: Aghade Bridge (S8568) [R. Slaney], ♂ 17 June 1985, KGMB; **St Mullins** (S7238), stream, 2 larvae 5 July 2014, MAOC/JPOC, det. JPOC. **CAVAN: R. Laragh** (H5210), LT 7♂♂11♀♀ 2-3 August 1973, JPOC (NMI); **Swanlibar R.** (H1524), ♂ 3 August 1973, JPOC. **CLARE: Killaloe** (R7072), adult 16 June 1913, CJM, det, JRAG (IM) (per IDW); **L. Inchiquin** (R2789), ♂ 4-6 June 1972, JPOC, conf. R. M. Badcock (NMI); **R. Inagh** (R1188), adults May-June, MK. **CORK: Ballyhooly** (W7199) [R. Blackwater], ♂ 10 June 1979, KGMB, det. JPOC; **Buttevant** (R5408) [R. Awbeg], MVLT ♀ 17 August 1995, KGMB (NMI); **Glinny, Riverstick** (W6658), seasonal streams/ponds in alder woods, MT 2♀♀ 8-28 June 2005, MCDS, det. JPOC; **R. Araglin** (R8703), larvae 1988-1990, NS; **R. Blackwater** (W5397), west of Mallow, 2♂♂♀ 4 August 1986, CM/OSF (SINMNH); **R. Lee** (W5671), adults May-June, MK; **R. Shournagh** (W5380), larvae, MM, det. JPOC (NMI). **DONEGAL: Kilmacrennan** (C1420) [Leannan R.], adult 18 August 1891, JJFXK, det. IDW (CTHM) (per IDW). **DUBLIN: Glencullen R.** (O1919), 7 larvae 27 September 1977, JPOC. **FERMANAGH:** Arney R. (H2336), Drumane Bridge, ♂ 13 May 2015, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Connemara National Park** (L7455), Polladirk R., larvae 1991, SV, conf. JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 3 May 1984, PB, det. JPOC; **Killian R.** (M7449), Carrowmore, road bridge u/s confluence with Shiven R., 2 larvae 12 May 2012, MG; **Loch an Droichid outflow** (M0542), Derryerglinna, LT ♀ 13 September 2014, MG/CC, det. MG; **R. Corrib** (M2925), Nun's Island, at light 2♂♂♀ 1-7 August 1973, ♂ 13 June 1978, DMG, det. JPOC (NMI); **R. Grange** (M5651), 5 larvae 2 September 1980, LW, conf. JPOC (NMI); **Roundstone** [L7138], Connemara, ♂ end of July [1835], J. Curtis (Lectotype of *Hydropsyche hibernica*) (NMV). **KERRY: Derriana L.** (V6274), stream near lake, LT 3♂♂ 1-13 July 1979, JPOC (NMI); **Killarney**, adult July 1940, BPB, det. JRH; **R. Curraheen** (Q7811) ♂♂♀♀ LT 7-8 July 1973, JPOC (NMI); **R. Flesk** (V9789), ♂ 3 July 1973, JPOC, (V9689), larvae May 1972, EJW (NMI). **KILDARE: R. Barrow** (S6892), near Athy, 3 larvae 7 July 2013, PS; **R. Boyne** (N6643), larvae April & May 1990, DAG/JML, det. JML. **KILKENNY: R. Nore** (S4472), larvae 16 August 2004, PS, (S4372), larvae 16 August 2004, PS, (S4470), Ballyragget, larvae 16 August 2004, PS, (S6337), Inistioge, 2♀♀ 21 July 2015, JPOC/MAOC, det. JPOC. **LAOIS: Oweg (Ouveg) R.** (S4473), larvae 16 August 2004, PS; **R. Nore** (S4276), Tallyho Bridge, larvae 16 August 2004, PS. **LEITRIM: Bonet R.** (G8434), larvae 19 July 1989, (G8534),

larvae 17 July 1989 & 26 March 1991, (G8433), larvae 17 July 1989, (G8231), larvae 18 July 1989 & 25 March 1991, (G8031), larvae 18 July 1989, (G7931), larvae 18 July 1989, (G8741), larvae 26 March 1991, (G8740), larvae 18 July 1989, (G8740), larvae 18 July 1989, (G8738), larvae 26 March 1991, (G8637), larvae 18 July 1989 & 25 March 1991, (G8535), larvae 17 July 1989, DAG/JML, det. JML; **Owenmore R.** (G9137), larvae 18 July 1989 & 26 March 1991, (G8839), larvae 26 March 1991, (G8839), larvae 26 March 1991, DAG/JML, det. JML. **LIMERICK: Galbally** (R7927), ♂ 14 June 1985, KGMB; **Groody R.** (R6155), 2 larvae 15 August 1984, B. F. Arthure (NMI); **Limerick** (R5757), adult 15 June 1913, CJM, det, JRAG (IM) (per IDW); **R. Shannon** (R5456), dredge 2 larvae 13 July 1972, AFF, det. JPOC, (R6663), Castleconnell, LT ♂ 12-13 July 1973, JPOC. **LOUTH: Towney Hall** (O0476), ♂ 15 June 1989, JPOC. **MAYO: Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT 20♂♂20♀♀ 30 May-20 June 1997, MCDS, det. JPOC. **MEATH: R. Boyne** (N8768), Navan, 4♂♂ 30 May 1988, JPOC (NMI), (N8660), Bective, 12 larvae 5 September 1988, (N8968), Blackcastle, 12 larvae 9 September 1988, (N9070), Dunmore Castle, 3 larvae 5 September 1988, (N8865), Kilcarn, 15 larvae 5 September 1988, (N8056), near Trim, 106 larvae 5 September 1988, (N8768), The Mollies, ♂♂ 24 May 1988, MFOG, det. JPOC, 3 larvae 9 September 1988, MFOG, det. JPOC, (N8057), larvae 5 September 1988, (N8659), larvae 5 September 1988, (N8865), larvae 5 September 1988, (N7352), larvae July 1991, (N9673), larvae July 1989, (N9972), larvae July 1989, (O0272), larvae July 1989, DAG/JML, det. JML; **Trimblestown R.** (N6967), larvae April 1990 & July 1991, DAG/JML, det. JML. **ROSCOMMON: R. Shannon** (N0243), Athlone, adult 20 August 1958, PHW (BMNH). **TIPPERARY: Breagagh R.** (S1458), larvae 5 September 1991 & 10 March 1992, DAG/JML, det. JML; **Brownstown R.** (S1665), larvae 5 September 1991 & 10 March 1992, DAG/JML, det. JML; **Cabragh Bog** (S1054), MVLT ♂6♀♀ 28 June 1994, KGMB, det. JPOC (NMI); **Kilmastulla R.** (R8072), (R8172), (R7972), (R7269), (R7169), larvae/adults 1976-1977, MAOC. **R. Black** (S1957), larvae 5 September 1991 & 10 March 1992, DAG/JML, det. JML; **R. Clover** (S1959), larvae 5 September 1991 & 10 March 1992, DAG/JML, det. JML; **R. Drish** (S2063), larvae 10 March 1992, (S1961), larvae 19 September 1991 & 10 March 1992, (S1759), larvae 5 September 1991 & 10 March 1992, DAG/JML, det. JML; **R. Suir** (S1362), larvae 19 September 1991, 10 March & 22 May 1992, (S1255), larvae 19 September 1991, DAG/JML, det. JML. **WESTMEATH: Athlone** (N0341) [R. Shannon], adults 4-5 July, 12a July & 19 July 1888 (2♂♂ conf. JPOC), [JJFXK], (BMNH); **R. Deel** (N5565), larvae September 1989, (N5854), larvae September 1989 & April 1990, (N5954), larvae September 1989 & April 1990, (N5953), larvae September 1989, (N6949), September 1989 & April 1990, DAG/JML, det. JML; **R. Shannon** (N0440), dredge below Athlone, larva 13 July 1972, AFF, det. JPOC. **WEXFORD: Corock R.** (S8921), ♂ 20 July 2015, JPOC/MAOC, det. JPOC; **Stoneyford** (T1009) [stream], at light, ♀ 6 June 1986, JPOC. **WICKLOW**: **Avondale** (T1986) [R. Avoca], ♂♂ 27

May 1988, JPOC; **Lisheens Stream** (O0219), 2 larvae 1981, COK, det. JPOC.

[*Hydropsyche saxonica* McLachlan, 1884

FIGURE 161. *Hydropsyche instabilis* with the colouration of *H. saxonica* from the Araglin River system, County Cork. The colour has faded after 25 years in spirit.

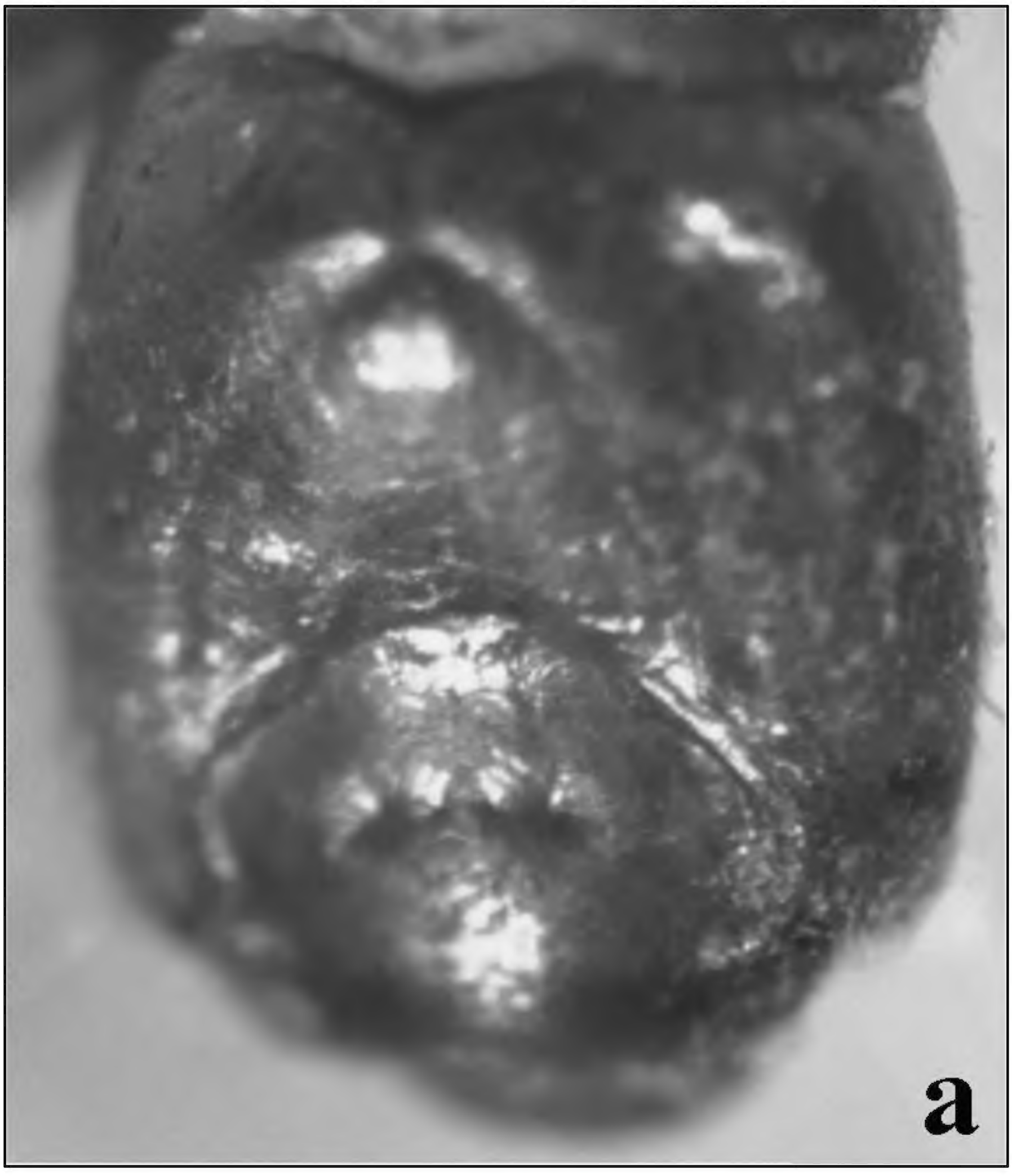
The Irish adult named *H. saxonica* in the Natural History Museum, London, was examined by Dr R. M. Badcock and found to be misidentified (Badcock, 1976). She did not state the species to which the specimen belonged. O'Connor (2010) misidentified larvae from a tributary of the Araglin River, County Cork, using Edington and Hildrew (1995) and these were redetermined as *H. instabilis* with Waringer and Graf (2011) [see discussion concerning frontoclypeal patterns under *H. fulvipes* above] (Figs 161-162). The ventral side of the heads of the identified

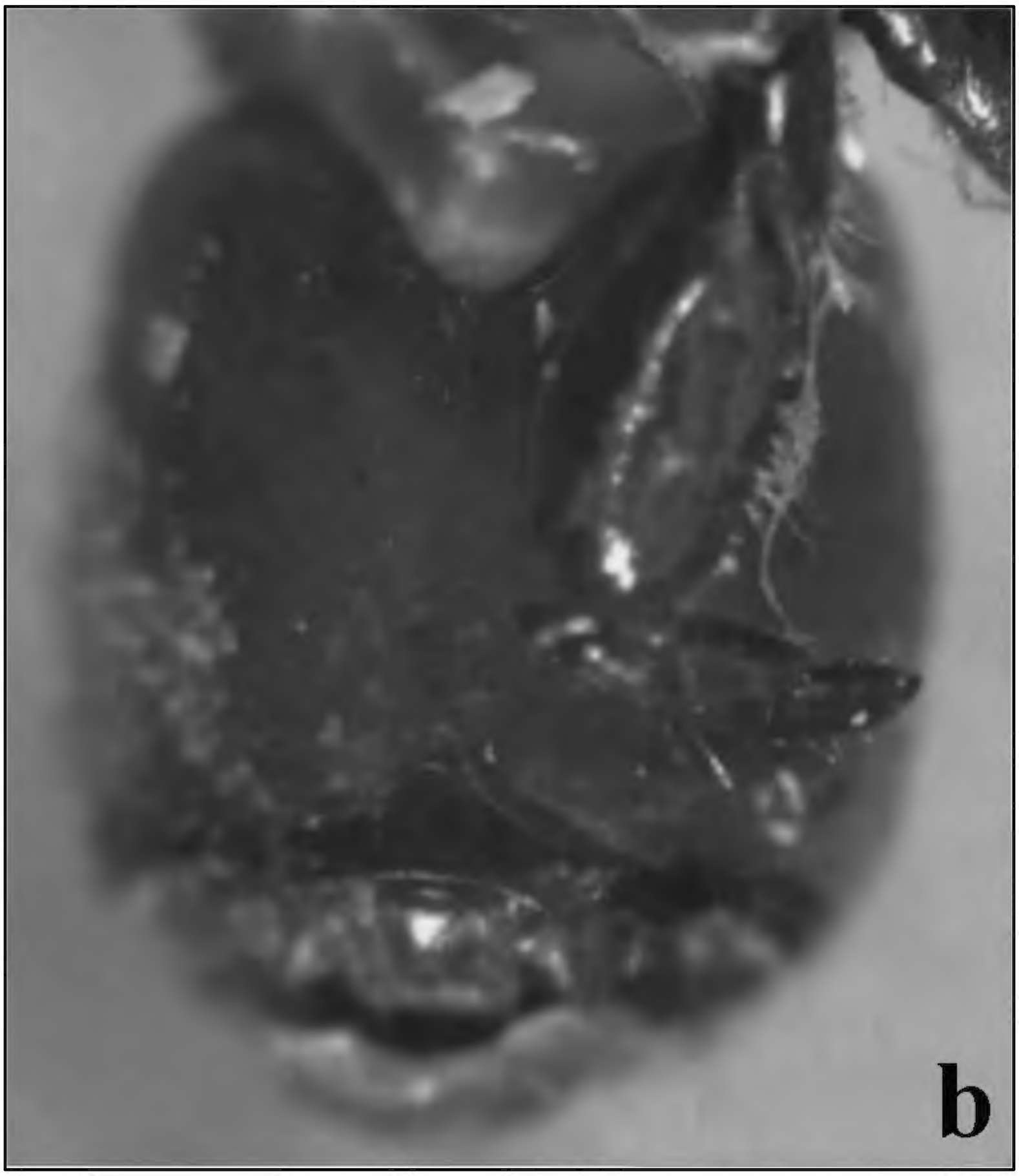
specimens lacked a pale anterior band or a pale median extension. These pale areas were present in other examined larvae of *H. instabilis* so these features may vary in the species. *H. saxonica* is therefore removed from the Irish list until definite pupal or adult material is discovered.

Published records

Botosaneanu and Malicky, 1978 (IRELAND) (probably based on the misidentified specimen in BMNH)]. *O'Connor, 2010* (unsafe larval identification using Edington and Hildrew (1995)). *O'Connor and Nelson, 2012* (CORK). *Barnard and Ross, 2012* (IRELAND).]

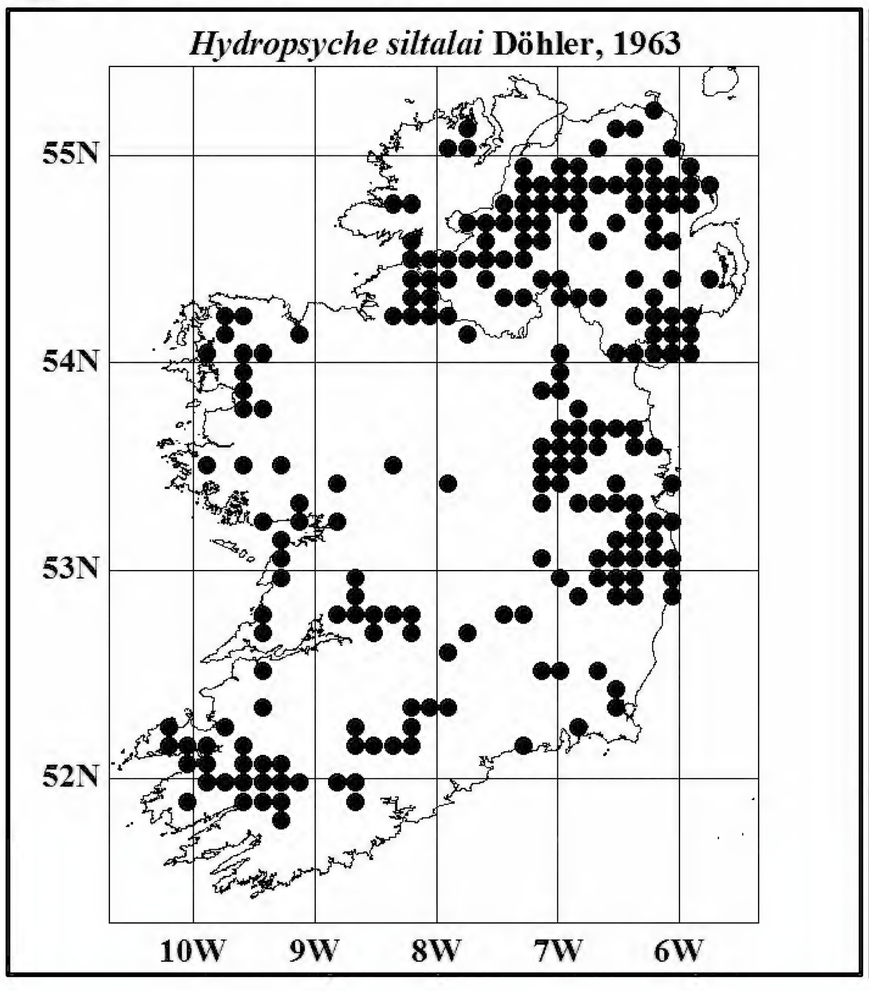
FIGURE 162. The above *Hydropsyche instabilis* showing (a) the transverse step and (b) the underside of the head (part of a front leg is also present on the right-hand-side).

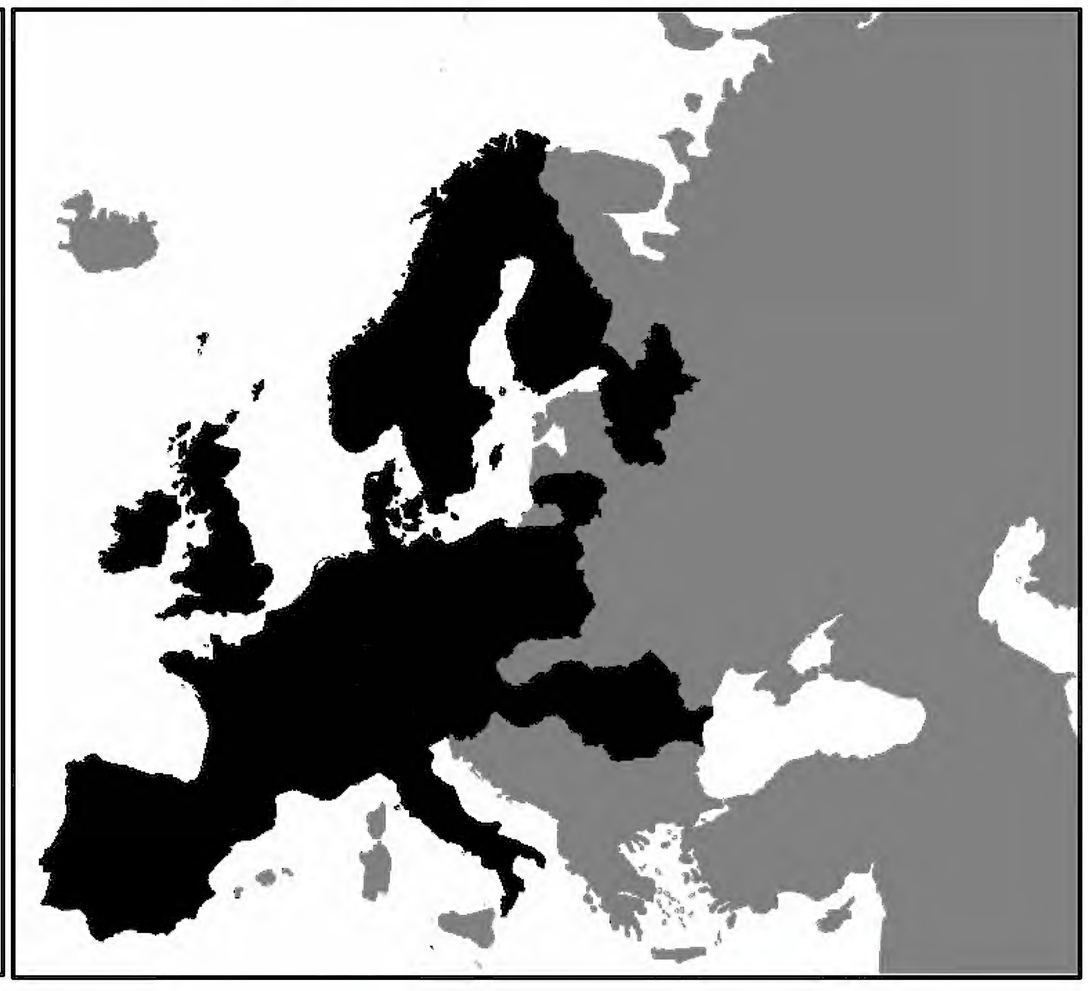




65. *Hydropsyche siltalai* Döhler, 1963

FIGURES 163-164. European and Irish distributions of *Hydropsyche siltalai*.





Sometimes, misidentified as *Hydropsyche instabilis* by earlier authors, *H. siltalai* is widespread in Ireland and can occur in large numbers. The net-spinning larvae inhabit streams and rivers where they trap food including *Daphnia*, green algae, detritus and diatoms. Interestingly, larvae are able to change from sessile filterers to vagile grazers on the bottom (Waringer and Graf, 2011). As with other *Hydropsyche* larvae, they can determine their microdistribution by antagonistic behaviour. Individuals use stridulation to repel others trying to occupy their retreats. It clearly increases the defender's chances of winning a fight, especially against a larger intruder (Jansson and Vuoristo, 1979). The larvae are among the prey of the stoneflies *Dinocras cephalotes* and *Perla bipunctata* (Lucy, Costello and Giller, 1990). The prepupal larvae/pupae are parasitized by the chironomid *Eurycnemus crassipes* (Meigen) in the pupal cases (Ashe, O'Connor and Murray, 2000) [the authority of *E. crassipes* was previously considered to be Panzer]. The pore-like openings in the silk of the pupal case of *H. siltalai* are wide enough to permit a first or possibly second instar chironomid to enter the pupal case. Infested or parasitized pupal cases, when viewed through the clear membrane on the underside of the case (attachment point), have a greyish appearance resulting from the partially consumed host body components. Movement of the chironomid larva or pupa may be observed through the same membrane. The consumed host consists of frass produced by the chironomid combined with the uneaten chitinised remnants (head fragments, thoracic plates and leg parts), the ectoparasitic larva or pupa residing within these remains (Ashe and O'Connor, 2002). In the Glenfinnish River, County Cork, the species was univoltine (Sangpradub, Giller and O'Connor, 1999). *H. siltalai* is widespread in Europe.

Flight period: June–September (5 June–3 September).

Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Laois, Leitrim, Limerick, Louth, Mayo, Meath, Monaghan, Offaly, Tipperary, Tyrone, Waterford, Westmeath, Wexford; Wicklow (29/32). The species is known from 223 10km squares (223/1019).

Published records

McLachlan, 1874-1884 as *Hydropsyche instabilis* (**IRELAND**). *King, 1888a* as *Hydropsyche instabilis* (**DUBLIN:** Lucan (O0335) [R. Liffey]. **GALWAY:** L. Corrib (near Galway) (M2829); Ma'am Burn (L9653). **KERRY:** Cloghereen (V9787); Denough [Deenagh] R. (V9792); Gap of Dunloe (V8787); Horses' Glen (V9981); The Glen in Deer Park (V9792); Torc Cascade (V9684). **LOUTH:** Carlingford (J1614). **MAYO:** Brocka, Carrowbeg (L9295), Cogaula (M0486), Croft (L9884) and Mount Brown [Kinlooey] (M0381) Laoghs; Carrowbeg R. (M0084). **WESTMEATH:** Ballykeeron [Ballykeeran] (N0744); Shannon (N0341). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *King and Halbert, 1910* as *Hydropsyche instabilis* (**DONEGAL:** Ardara (G7390) [Owntocker R.]; Bundoran (G8259); Cottian (C1318) [Leannan R.]; Lennan Bridge (C1621) [Leannan R.]; L. Reelan (C1327); etc.

DUBLIN: Lucan (O0335) [R. Liffey]; R. Dodder between Templeogue and Tallaght (O1027). **GALWAY:** Cong (M1455) [L. Corrib]; L. Corrib near Galway (M2829); Maam R. (L9653). **KERRY:** Cloghereen (V9787); Deenagh R. (V9792); Gap of Dunloe (V8787); Horse's Glen (V9981); Torc Cascade (V9684); etc. **KILKENNY**. **LOUTH:** Carlingford (J1614). **MAYO:** Brocka, Carrowbeg (L9295), Cogaula (M0486), Croft (L9884) and Mount Brown [Kinlooey] (M0381) Loughs; Carrowbeg R. (M0084). **MONAGHAN:** Emyvale (H6843). **OFFALY [**King's County]**:** Edenderry (N6332). **WESTMEATH:** Ballykeeran (N0744); Shannon (N0341). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Halbert, 1912* as *Hydropsyche instabilis* (**MAYO:** Westport (L9984)). *Mosely, 1927* as *Hydropsyche instabilis* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Hydropsyche instabilis* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Hydropsyche instabilis* (**GALWAY:** Galway (M2926); Inverin (M0822)). *Beirne, 1939* as *Hydropsyche instabilis* (**CORK:** Ballyhooly (W7298) [R. Blackwater]). *Frost, 1939 as Hydropsyche instabilis* (**KILDARE:** Straffan (N9229). **WICKLOW:** Ballysmuttan [R. Liffey] (O0514)). *Frost and Went, 1940* as *Hydropsyche instabilis* (**KILDARE:** Straffan (N9229)). *Frost, 1942* as *Hydropsyche instabilis* (**KILDARE:** Straffan (N9229) [R. Liffey]. **WICKLOW:** Ballysmuttan [R. Liffey] (O0514)). *Toner and O'Connell, 1971* as *Hydropsyche instabilis* (**CORK:** Fermoy (R. Blackwater) (W8098); Mallow (R. Blackwater) (W5598); Mitchelstown (R. Funcheon) (R8113). **KERRY:** Rathmore (R. Blackwater) (W1693)). *Fahy, 1972b* as *Hydropsyche instabilis* (**MAYO:** river near Newport (F9605)). *McCarthy, 1972* as *Hydropsyche instabilis* (**DONEGAL:** Glen R. (Owenea R.) (G8893)). *Clabby and Bracken, 1976* as *H. siltabia* (**WICKLOW:** Glencullen R. (O1819), (O1919), (O2117), (O2217) [An * in this paper indicates adults taken and determined by JPOC]). *McCarthy, 1977* as *Hydropsyche instabilis* (**MEATH:** Trimblestown R. (N7262)). *O'Connor and Bracken, 1978* (**CAVAN:** (H0027), (H0626), (H1424), (H6709), (N6893), (N6193). **CLARE:** (Q9966), (R0271), (R1388), (R1191), (R5367), (R5166), (R5695), (R6767). **DUBLIN:** (O1228), (O0926). **GALWAY:** (M4341). **KERRY:** (V5572), (V5872), (V9872), (V9789), (V9689), (V9188), (W0387), (Q8804), (Q7811), (Q5904), (Q5410), (R0139). **MEATH:** (N8559), (N8172). **WESTMEATH:** (N0440). **WICKLOW:** (S8892), (S9986), (S9398), (O0001), (O0208), (O1501), (O2108), (O2518), (O1919), (T0981), (T1799), (T2985)). *O'Connor, 1978a* (**IRELAND:** a common species). *O'Connor and Bracken, 1980b* (**MEATH:** R. Tolka (O0241), bridge upstream of Dunboyne tributary, (O0341), Clonee Bridge). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480), (V7281), (V7182), (V7186), (V7192)). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1325), (O1326), (O1327)). *Lucy, Costello and Giller, 1990* (**CORK:** Shournagh R. (W5975). **KERRY:** Cottoners R. (V8379)). *Kelly-Quinn, 1991* (**WICKLOW:** Glenealo R. (T1196)). *Twomey and*

Giller, 1991 (**CORK:** tributary of R. Araglin (R8702)). *Bracken, Norton and Phillips, 1991* (**TIPPERARY:** Kilmastulla R.). *O'Grady and King, 1992* (**MAYO:** Bunree R. (G3118), (G3120)). *Giller and Twomey, 1993* (**CORK:** Glenfinnish R. (R8702); R. Awbeg (R6804)). *Ashe, 1995* (**KERRY:** R. Flesk). *Carter and Wood, 1995* (**ANTRIM:** Clogh R. [indicative D1616]). *Tierney, Kelly-Quinn and Bracken, 1998* (**WICKLOW:** no sites given for the species). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Wright et al., 2000* (**NORTHERN IRELAND:** 62 out of 70 sampled sites). *Ashe, O'Connor and Murray, 2000* (**KERRY:** R. Flesk (V9689)). *Ashe and O'Connor, 2002* (**IRELAND**). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706) and near Murroogh (M1508)). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune, the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 188 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Anon. 2008* (**DUBLIN:** Delvin R. (O1160), (O1565)). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *Anon., 2011* (**WEXFORD:** Ballyvalloge Stream (S9823); Ballyvoleen R. (S9625); Mullinree R. (S9922)). *Gammell, 2011* (**WEXFORD:** Crory Lower Stream, Edenvale (T0327); R. Sow, Edenvale (T0427)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); L. Derriana stream (V6274); Muckross Lake (V9685); R. Behy (V6589); R. Flesk (V9789); R. Galey (R0139); R. Inny (V5572)). *O'Driscoll et al., 2013* (**MAYO:** Glennamong (F9303), (F9403)). *O'Driscoll et al., 2014* (**MAYO:** Glennamong R. (F9303); Srahrevagh R. (G0004)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Cashel Burn (D1706); Coopers Water (J2175); Doagh R. (J2693); Doagh R. tributary (J2593); Douglas Burn (J2299); Dunnstown Burn (D0409); Glenariff R. (D2221); Glynn R. (J4099); Kellswater (J1698); Legnagooly Burn (D1312); R. Blackwater (H7544), (H6253); R. Braid (D1003); R. Bush (D0729), (C9436); R. Clady (Clady Water) (J1984), (C9603); R. Clogh (D0613); R. Crumlin (J1976); R. Dervock (D0233); R. Glenarm (D3114); R. Glenshesk (D1240); R. Larne (D3700); R. Main (J0889), (D0513); Ross Burn (J1597); Six Mile Water (J3195), (J2890). **ARMAGH:** Forkhill R. (J0115); Kilnasaggart (R.) (J0615); R. Callan (H8539); R. Cusher (J0350). **DERRY (LONDONDERRY):** Cam Burn (C8421); Miltown Burn (H8499); R. Aghadowey (C8722); R. Agivey (C7912); R. Ballinderry (H9279), (H7379); R. Douglas (H7796); R. Faughan (C4713); R. Inver (C5301); R. Mayoghill (C8819); R. Owenalena (C7406); R. Owenbeg (C6809); R. Owenrigh (C6606); R. Roe (C7506). **DOWN:** Begny Hill Feeder (J2850); Cassy Water (J2314); Newry R. (J0730); R. Annacloy (J4448); R. Annalong (J3719); R. Kinnahalla (J2328); R. Mullagh (J3316); R. Shankys (J2225); R. Shimna (J3532); Spences R. (J3722); Upper Bann (J1345), (J2129). **FERMANAGH:** Cooneen Water (H4539); Foxhill Burn (H2752); Lisnabane

Burn (H3744); R. Ballinamallard (H2853); R. Bannagh (H1665); R. Black (H0143); R. Colebrooke (H3744); R. Garvary (H0063); R. Glendurragh (H2265); R. Lack (H2566); R. Roogagh (Glen R.) (G9451); R. Sillees (H1152); R. Termon (H1165). **TYRONE:** Ballygawley R. (Ballygawley Water) (H6353); Black Water (H2974); Dreenan Burn (H2184); Dunnyboe Burn (H4599); Eskragh Water (Quiggery Water) (H4763); Fairywater (H3976); Fury R. (H5551); Glashagh Burn (H6180); Gortin Water (H7879); Granagh Burn (H6072); Lissan Water (H8081); Oughtmame Burn (H6293); R. Ballinderry (H8376); R. Blackwater (H7544), (H6253); R. Camowen (H4673); R. Cloghfin (H5767), (H5170); R. Coolaghty (H2567); R. Derg (H1980), (H3184); R. Glenelly (H5691); R. Owenkillew (H4387), (H6184); R. Owenreagh (H3365), (H5882); R. Strule (H4186); Quiggery Water (H4467); Tullynadall Burn (H4490)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8467), (R8667), (R8168); R. Tar (R9419), (R9019), (R8919), (R9117), (R9416)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *Feeley and Kelly-Quinn, 2014* (**CORK:** Boohill R. (W1980); Cummeenabuddoge Stream (W2084); Foherish R. (W2480). **KERRY:** Clydaghroe Stream (W1883); Glanlee R. (W0774); Glashacormick Stream (W1583); Glashnasharragh Stream (W1784); Knocknabro Stream (W1684); Knocknagowen Stream (W2084); tributary of Clydagh (W1683), (W1783), (W1983). **MAYO:** Croaghaun Stream (F8419); Fiddauntuckletaun Stream (F9732); Fiddaunuganass Stream (F9732); Glenturk More (F8629); headwater of Bar Deela R. (F9611); headwater of Oweniny R. (F9412); headwater of Skerdagh R. (G0003); Srahnamanragh Stream (F8014); tributary of Castlehill R. (G1010); tributary of Glenamoy R. (F9033); tributary of Glenturk Beg (F8827); tributary of Goulan R. (F9807). **WICKLOW:** Ballyknocken Brook (O0006); Cransilliagh Brook (O0814); Fraughan Brook (O0108); Inchavore R. (O1204); Toor Brook (N9502); tributary of Cloghoge R. (O1419); tributary of R. Liffey (O1112)). *Anon., 2015a* (**DUBLIN:** Howth Head (O2738); Liffey Valley Park, Waterstown (O0835). **KERRY:** Killarney National Park (V9590). **WICKLOW:** Wicklow Mountains National Park (T1196)).

Unpublished records and voucher specimens

CARLOW: R. Barrow (S7237), St Mullins, LTS ♂8♀♀ 22 July 2015, JPOC/MAOC, det. JPOC; **St Mullins** (S7237), stream entering R. Barrow, 10 larvae & ♂ 5 July 2014, JPOC/MAOC, det. JPOC, ♂ same data, det. H. Malicky (NMI). **CAVAN: R. Annalee** (H7205), below L. Sillan, larva 1 August & ♂ 1 September 1973, JPOC; **R. Barora** (N6893), LT ♂4♀♀ 1-2 August 1973, JPOC; **R. Owenmore** (H0626), larva & ♂ 3 August 1973, JPOC; **stream** (N6193), larvae 2 August 1973, JPOC; **Swanlibar R.** (H1524), larva 3 August & 3 larvae 28 September 1973, JPOC. **CLARE: Cullenagh R.** (R1388), LT 86♂♂87♀♀ 9-10 July 1973, JPOC; **Denlagh R.** (R1191), larva 30 August 1973, JPOC; **L. Inchiquin** (R2789), LT 2♂♂3♀♀ 31 August-1 September 1973, JPOC; **north of Sixmilebridge** (R4767) [Rally R.], ♂ 6 August 1986, CM/OSF (SINMNH); **R. Annageeragh** (R0371), 11 larvae 9 July 1973,

JPOC; **R. Bleach** (R5795), 4 larvae 13 July 1973, JPOC; **R. Caher** (M1608), Burren, larva 17 July 1981, JPOC; **R. Creegh** (Q9966), ♂ 29 August 1973, JPOC; **R. Ennistymon** (Inagh R.) (R1288), LT 3♂♂ 15 July 1981, JPOC; **R. Gournar** (R5166), ♂ pupa 12 July 1973, JPOC; **stream** (R5376), 2 larvae 12 July 1973, JPOC; **stream** (R5567), east of Sixmilebridge, ♀ 6 August 1986, CM/OSF (SINMNH); **stream/waterfall** (H0127), ♂♀ pupae 3 August 1973, JPOC. **CORK: Ballyhooly** (W7298) [R. Blackwater], ♂ 10 August 1938, BPB (as *Hydropsyche instabilis*), det. JPOC (BMNH); **Buttevant** (R5408) [R. Awbeg], MVLT ♀ 17 August 1995, KGMB (NMI); **Gouganebarra** (W0966), 2 larvae 27 October, MJC, det JPOC; **Millstreet** (R8805), Araglin R. Valley, ♂ 23 July 1982, KGMB, det. JPOC (NMI); **Rahan** (W6398), marshy area near small river, light ♂ June-September 1988, PS, det. JPOC; **R. Araglin Catchment** (R8702), larvae, NS & PSG, (W5973), [R. Lee], near Carrigrohane, MVLT ♂ 23 July 1985, KGMB, det. JPOC; **R. Shournagh** (W5380), larvae, MM, det. JPOC (NMI). **DONEGAL: Ardara** (G7390) [Owntocker R.], ♂ 29 July 1892 (misidentified as *Hydropsyche instabilis*), WFJ, det. JPOC (NMI); **Coolmore** (G8566), ♂ July 1894 (misidentified as *Hydropsyche instabilis*), [WFJ], det. JPOC (NMI); **Glenveagh National Park** (C0423), at light 4♂♂ 4 August 1982, COK, det. JPOC (NMI). **DOWN: Mayobridge** (J1527), stream, larva 22 June 2014, MAOC, det. JPOC (NMI). **DUBLIN: Dublin**, ♂ 9 June 1895 (misidentified as *Hydropsyche instabilis*), det. JPOC (NMI); **Glencullen R.** (O1919), 9 larvae 27 September 1977, JPOC; **Lucan** (O0335) [R. Liffey], ♂ 29 August 1888, [JJFXK], det. RMCL (as *Hydropsyche instabilis*), det. JPOC (BMNH); **R. Dodder** (O0926), 10 larvae 11 June 1971, (O1228), 2 larvae 11 June 1971, AFF, det. JPOC; **R. Liffey** (O0735), east of Lucan, ♂ 31 July 1986, CM/OSF (SINMNH). **GALWAY: Connemara National Park** (L7157), 3♂♂ 18 August 1982, COK, det. JPOC, (L7455), Polladirk R., larvae 1991, SV, conf. JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 7 January 1984, PB, det. JPOC; **Galway** (M2926), ♂ 22a July 1888, [JJFXK], det. RMCL (as *Hydropsyche instabilis*), det. JPOC (BMNH), ♂ 22a July 1988 (misidentified as *Hydropsyche instabilis*), JJFXK, det. JPOC (NMI), ♂ 17 July-2 August 1926, MEM (as *Hydropsyche instabilis*), det. JPOC (BMNH); **Inverin** (M0822), 3♂♂ 17 July-2 August 1926, MEM (as *Hydropsyche instabilis*), det. JPOC (BMNH); **Killian R.** (M7449), Carrowmore, road bridge u/s confluence with Shiven R., 5 larvae 12 May 2012, MG; **R. Corrib** (M2925), Nun's Island, ♂ 5 June & ♂♀ 30 August 1978, ♂ 30 July & ♀ 6 August 1980, DMG, det. JPOC. **KERRY: Caragh R.** (V7192), larva 19 April 1976, JPOC (NMI); **Derriana L.** (V6274), stream, 5♂♂ LT 1 July-13 July 1979, JPOC (NMI); **Killarney**, ♀ (NMS), ♂ 8 July, ♂ 18a July & 3♂♂ 5 August 1887 (all misidentified as *Hydropsyche instabilis*), JJFXK, det. JPOC (NMI); **Lack Mountain** (Q7103), ♂ 27 June 1985, KGMB, det. JPOC (NMI); **Mangerton** (V9780), ♂ 17 August 1877, AEE, det. RMCL (as *Hydropsyche instabilis*), det. JPOC (BMNH); **O'Sullivan's Cascade** (V9188), shore of L. Leane, larva 13 April 1973, larva 27 August 1987, JPOC;

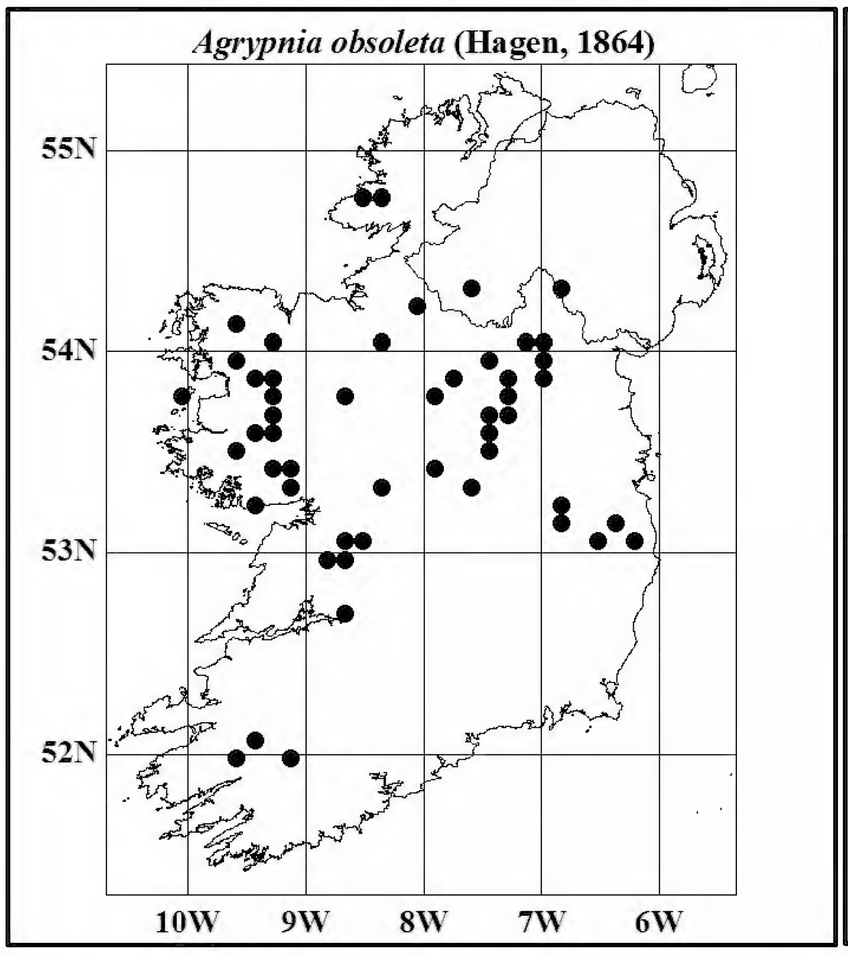
Owenschull R. (Q5901), larva 7 July 1973, JPOC; **R. Cummeragh** (V5872), 11 larvae 6 July 1973, JPOC; **R. Curraheen** (Q7811), ♂♂♀♀ LT 7-8 July 1973, JPOC (NMI); **R. Flesk** (V9689), remains found with *Eurycnemis crassipes* (Meigen) (Diptera: Chironomidae), 8 August 1994, PA, det. JPOC (NMI), (V9890), LT 10♂♂ July 1977, MFOG, det. JPOC, (V9789), ♂ 25 June 1973, (W0387), larva 16 November 1971, EJW, det. JPOC (NMI), larva July 1971, JPOC; **R. Galey** (R0438), 4 larvae 8 July 1973, JPOC; **R. Glenahoo** (Q5410), 4 larvae 7 July 1974, JPOC; **R. Maine** (Q8905), 3 larvae 7 July 1973, JPOC; **R. Roughty** (V9873), larva 26 August 1973, JPOC; **Slievanea** (Q5006), Dingle [L. Doon], adult 22 August 2003, GAC (per IDW); **stream** (V9673), entering Roughty R., 2 larvae 4 July 1973, JPOC; **stream** (R0871), at Doolough, 2 larvae 9 July 1973, JPOC. **KILDARE: R. Barrow** (S6892), near Athy, 20 larvae 7 July 2013, PS; **R. Boyne** (N6643), larvae May 1990, DAG/JML, det. JML; **R. Slaney** (S8185), near Slaney on Stratford, larvae reared (♂♂) 25 May-31 July 1987, MK, det. JPOC; **Rye Water** (O0036), Leixlip, adult 14 June 1947, JRH. **KILKENNY: R. Nore** (S4372), larvae 16 August 2004, PS, (S6337), 2♂♂♀ 30 July 2015, JPOC. **LAOIS: Oweg (Ouveg) R.** (S4473), larvae 16 August 2004, PS; **R. Barrow** (N6301), Dunrally Bridge, ♀ 3 August 1986, CM/OSF (SINMNH). **LEITRIM: Owenmore R. (**G9137), larvae 26 March 1991, (G8839), larvae 26 March 1991, (G8444), larvae 25 June 1991, (G8434), larvae 19 July 1989, (G8534), larvae 17 July 1989, 26 March & 24 June 1991, (G8433), larvae 17 July 1989, (G8231), larvae 18 July 1989, 25 March & 24 June 1991, (G8031), larvae 18 July 1989, (G7931), larvae 18 July 1989, (G8446), larvae 18 July 1989 & 25 June 1991, (G8642), larvae 18 July 1989, (G8741), larvae 18 July 1989, 26 March & 25 June 1991, (G8740), larvae 18 July 1989, (G8738), larvae 26 March & 24 June 1991, (G8637), larvae 18 July 1989 & 25 March 1991, (G8535), 25 March & 24 June 1991, DAG/JML, det. JML. **LIMERICK: R. Shannon** (R6663), Castleconnell, LT 2♂♂231♀♀ 12-13 July 1973, JPOC. **MAYO: Westport** (L9984), 4♂♂ (misidentified as *Hydropsyche instabilis*), JJFXK, det. JPOC (NMI). **MEATH: Kells Blackwater R.** (N8172), 5 larvae 8 July 1972, AFF, det. JPOC; **R. Blackwater** (N7377), west of Kells, 5♂♂8♀♀ 1 August 1986, CM/OSF (SINMNH), (N8668), larvae 5 September 1988, DAG/JML, det. JML; **R. Boyne** (N8768), Navan, adult 3 August 1945, JRH, (N9070), Dunmore Castle, larva 5 September 1988, (N8865), Kilcarn, 520 larvae 5 September 1988, (N7756), near Trim, 4 larvae 25 June 1971, (N7957), 33 larvae 25 June 1971, AFF, det. JPOC, (N8968), Blackcastle, larva 9 September 1988, (N8056), near Trim, 21 larvae 5 September 1988, (N8768), The Mollies, 24 larvae 9 September 1988, MFOG, det. JPOC, (N6340), larvae April 1990, (N8057), larvae 5 September 1988, (N8659), larvae 5 September 1988, (N8865), larvae 5 September 1988, (N7149), larvae June 1989 & July 1991, (N7352), larvae June 1989 & July 1991, (N9972), larvae July 1989, (O0272), larvae July 1989, (O0476), larvae July 1989, DAG/JML, det. JML; **Stonyford R.** (N7834), larvae June 1989, (N6956), larvae June 1989, DAG/JML, det. JML; **Trimblestown R.** (N6967),

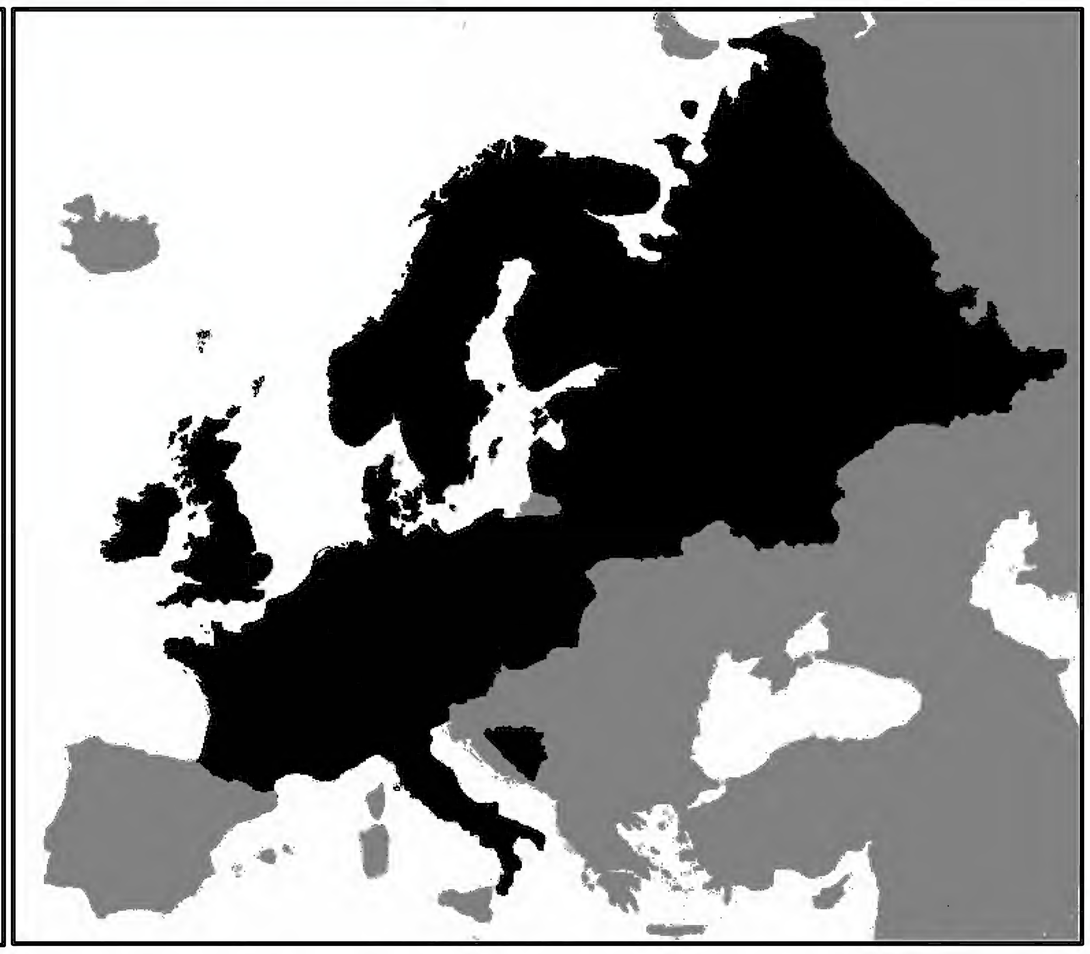
larvae June 1989 & April 1990, DAG/JML, det. JML. **MONAGHAN: Emyvale** (H6843), ♀, (NMS). **OFFALY: Yellow R.** (N5838), larvae June 1989, (N5937), larvae June 1989, DAG/JML, det. JML. **TIPPERARY: Breagagh R.** (S1458), larvae 10 March & 6 July 1992, DAG/JML, det. JML; **Brownstown R.** (S1665), larvae 10 March & 6 July 1992, DAG/JML, det. JML; **Cahir** (R0620), Ballybrado House, 2♂♂ 14 July 1986, KGMB, det. JPOC (NMI); **Kilmastulla R.** (R8172), (R7972), (R7871), (R7571), (R7269), (R7169), (R6867), larvae/adults 1976-1977, MAOC; **R. Black** (S1957), larvae 10 March & 6 July 1992, DAG/JML, det. JML; **R. Clover** (S1959), larvae 10 March 1992, DAG/JML, det. JML; **R. Drish** (S1961), larvae 19 September 1991, 10 March & 6 July 1992, (S1759), larvae 5 September 1991, DAG/JML, det. JML; **R. Suir** (S1362), larvae 19 September 1991 & 10 March 1992, (S1255), larvae 22 May 1992, DAG/JML, det. JML, (S0424), Cahir, ♂4♀♀ 3 August 1986, CM/OSF (SINMNH). **TYRONE: Ulster-American Folk Museum** (H4379), near Strule R., LT ♂ 3 September 2014, VA, det. JPOC. **WATERFORD: Annestowns R. Valley Reserve** (S5000), small outflow stream from pond, 6 larvae 8 July 2014, MAOC/HOC, det. JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 3a July 1888, (misidentified as *Hydropsyche instabilis*), JJFXK, det. JPOC (NMI); **Kinnegad R.** (N5344), larvae June 1989, DAG/JML, det. JML; **Mongagh R.** (N5938), larvae June 1989, DAG/JML, det. JML; **R. Deel** (N5565), larvae September 1989, April 1990 & July 1991, (N5854), larvae September 1989 & April 1990, (N5954), larvae April 1990, (N5953), larvae July 1991, (N6949), larvae September 1989, April 1990 & July 1991, DAG/JML, det. JML; **R. Shannon** (N0440), dredge larva 13 July 1972, AFF, det. JPOC. **WEXFORD: R. Boro** (S9636), Soldiers Hole, ♂ 23 July 2015, JPOC/MAOC, det. JPOC (NMI); **stream** (S7806), Pollfur Bridge near Fethard, 8 larvae 30 June 2014, MAOC/JPOC, det. JPOC; **Urrin R.** (S8943), bridge near Mangan, 7 larvae 3 July 2014, MAOC/JPOC, det. JPOC. **WICKLOW: Annamoe R.** (T1799), larva & ♂3♀♀ 19 August 1973, JPOC; **Brown's Beck Brook** (S9398), ♂♀ 24 July 1973, 2 larvae 20 September 1973, JPOC; **Glencullen R.** (O1919), 2♂♂3♀♀ 22 July & LT 21♂♂35 ♀♀ 18-19 August 1973, JPOC (NMI); **Glendalough** (T1196), ♂♀ 31 July 1986, CM/OSF (SINMNH); **King's R.** (O0401), LT ♂♂♀♀ 22-23 July 1973, JPOC; **Murrough marshes** (O3103), MVLT ♂ 20 July 1977, MDCW, det. JPOC; **R. Avonbeg** (T0396), Glenmalur, adult, JRH; **R. Bray** (O2518), ♂6♀♀ 14 August 1972, JPOC; **R. Derriana** [Derneen] (S9987), 7 larvae & ♂5♀♀ 23 July 1973, JPOC; **R. Inny** (V5674), LT 48♂♂47♀♀ 5-6 July 1973, JPOC; **R. Liffey** (O0514), Ballysmuttan, adults 2 July & 25 July 1946, JRH; **R. Ow** (T0981), ♂ pupa 18 July 1973, JPOC; **R. Potter** (T2985), 3 larvae 19 September 1973, JPOC; **R. Slaney** (S8892), LT 38♂100♀♀ 24-25 July 1973, JPOC; **stream** (O0208), larva 24 July 1973, JPOC; **stream** (O1502), below L. Dan, ♂ pupa 21 July 1973, JPOC; **Vartry Reservoir** (O2004), Roundwood, LT 2♂♂ 12 July 1983, HAD, conf. JPOC; **Vartry R.** (O2208), ♂♂♀♀ 4 August & 7♂♂5♀♀ 24 August 1972, (T2796), 2 larvae & 5♂♂♀ 20 July 1973, JPOC (NMI).

PHRYGANEIDAE

66. *Agrypnia obsoleta* (Hagen, 1864)

FIGURES 165-166. Known Irish and European distributions of *Agrypnia obsoleta*.





Agrypnia obsoleta is widely distributed in Ireland but has yet to be found in the south-east due to the scarcity of suitable habitat. The larval case is tubular, formed spirally with cut pieces of shore weed, leaves or pieces of vegetable debris. The larvae occur in bog pools/hollows, canals, fens, lakes and ponds both upland and low lying, reservoirs and rivers. The habitats range from base-poor ones to highly calcareous waters such as Lough Sheelin. The species is also present in the River Shannon. *A. obsoleta* is widespread in Europe but appears to be absent from the Iberian Peninsula.

Flight period: July–October (4 July–1 October).

Counties and 10km squares: Cavan, Clare, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Leitrim, Limerick, Longford, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Westmeath, Wicklow (19/32). The species is known from fifty-one 10km squares (51/1019).

Published records

McLachlan, 1877a (**LIMERICK:** Limerick (R5757) [R. Shannon]). *Cooke, 1878* as *Phryganea* (**KERRY:** Killarney). *Morton, 1883* as *Phryganea* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* as *Phryganea* (**KERRY:** Killarney. **LIMERICK:** Limerick (R5757) [R. Shannon]. **MONAGHAN:** Glaslough (H7241). **WESTMEATH:** Shannon (N0341)). *King and Halbert, 1910* as *Phryganea* (**DONEGAL:** Ardara (G7390) [Owntocker R.]; Kellystewart L. [Killystewart L.] (G7189) (this is in Donegal near Ardara and not in Armagh). **KERRY:** Killarney. **LIMERICK:** Limerick (R5757) [R. Shannon]. **MONAGHAN:** Glaslough (H7241). **WESTMEATH:** Shannon (N0341)). *Mosely, 1927* as *Phryganea* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Phryganea* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Phryganea* (**GALWAY:** Inverin (M0822)). *Praeger, 1950* as *Phryganea* (ARMAGH [mistake]. **DONEGAL**. **KERRY**.

LIMERICK. **MONAGHAN**). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* as *Phryganea* (**CAVAN:** L. Sillan (H6906), adults). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** more widespread in Ireland). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** more widespread in Ireland). *Millane, 2006* (**MAYO:** L. Carra (M1673), (M1871), (M1777)). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *Hannigan and Kelly-Quinn, 2012* (**MAYO:** Knockmoyle Bog (F9723), pools, hollows; Owenirragh Bog (F9436), pools, hollows. **OFFALY:** Clara Bog (N2429), pools. **ROSCOMMON:** Carrowbehy Bog (M5782), pools [according to the calculated grid reference from the given co-ordinates, the site is in Co. Mayo and not Co. Roscommon as stated. However, the National Parks and Wildlife Service do place it in Roscommon but with different co-ordinates. These have been used to calculate the grid reference]. **WICKLOW:** Kippure Bog (O1412), hollows). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lakes (R5088), 273m, (R5188), 262m. **CORK/KERRY:** upland lakes (W1881), 426m, (W1881), 429m. **GALWAY:** upland lakes (M5403), 282m, (M6701), 183m). *Little and Free, 2013* (**GALWAY:** L. Maumwee [Manwee] (L9748)). *Baars et al., 2014* (**IRELAND:** recorded in 4 of 12 upland peatland lakes). *Hannigan and Kelly-Quinn, 2014* (**IRELAND:** raised and blanket bog). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Mill L. (H2438)). *Anon., 2015a* (**WICKLOW:** Wicklow Mountains National Park (O0101)).

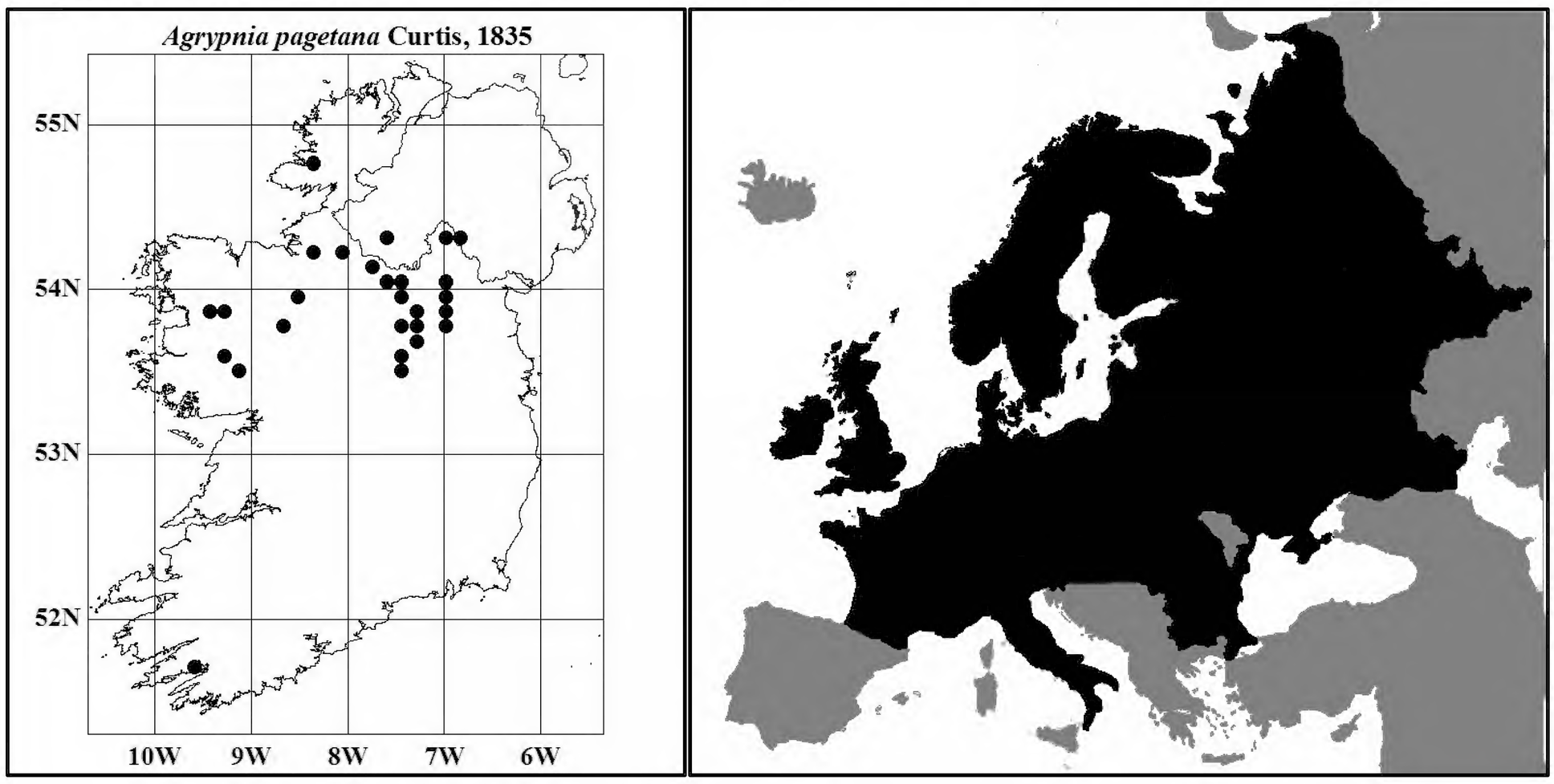
Unpublished records and voucher specimens

CAVAN: Corrakane L. (H4000), small lake, LT 14♂♂♀ 4-5 August 1973, JPOC (NMI); **L. Cuilcagh** (N6389), ♂ 10 August 1972, 7 larvae reed bed, 29 March 1973, JPOC; **L. Moneen** (G9828), 9♂♂ 3 August 1973, JPOC; **L. Sheelin** (N4686), adults 30 August 1945, 26 August 1946 & 11 August 1947, JRH, (N4786), ♂ 5 August 1973, JPOC; **L. Sillan** (H6906), LT ♂♂ 31 July-1 August 1973, JPOC; **Moyduff Lake** (H6909), 3♂♂2♀♀ 10 August 1973, JPOC (NMI); **R. Laragh** (H5210), LT ♂ 2-3 August 1973, JPOC. **DONEGAL: Killystewart L.** (G7189), Ardara, ♂ 14 July 1892, WFJ, conf. JPOC (NMI). **DUBLIN: The Featherbed** (O1313), pool, 3 larvae 21 March 1973, JPOC. **FERMANAGH: Mill L.** (H2438), near Bellanaleck, LT 5♂♂♀ 26 August 2014 (NMI), LT 10 ♂♂ 2 September 2015, JPOC/MAOC, det. JPOC. **GALWAY: Inverin** (M0822), adult 17 July-2 August 1926, MEM (BMNH); **L. Acalla** [Callow L.] (M7234), adult, MK; **L. Corrib** (M1745), adults July-September 1971, MK, (M2531), Hurney's Point [near Moycullen], MVLT 3♀♀ 12 August & ♂ 28 August 2003, (M2642), Keekill, LT ♀ 2 August 2003, KGMB, det. JPOC, (M2531), Lower, ♂ 16 August 1980, BC, conf. JPOC; **L. Mask** (M0957), Kilbeg Lower, LT ♂ 6 August 2014, MG. **KERRY: Crinnagh R.** (V9481), ♀ 4 August 1986, CM/OSF (SINMNH); **Kilbrean Lake** (W0093), ♂ 7 September 1972, JPOC. **KILDARE: Milltown** (N7617), canal tow-path, ♂ 4 July 1982, D. Murphy,

det. JPOC (NMI), canal, 17♂♂ 3 August 1986, CM/OSF (SINMNH), JPOC; **Newbridge (Pollardstown) Fen** (N7715), MVLT ♂ 22 July 1989, KGMB/JAG, det. JPOC (NMI). **LEITRIM: Keeldra Lake** (N1495), adult, MK. **LONGFORD: R. Shannon** (N0684), north of L. Forbes, 10♂♂ 16 July 1978, JPOC. **MAYO: Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults July-September 1964, MK; **Clare Island** (L6985), ♀ 4 August 1998, SF, conf. JPOC (NMI); **L. Conn** (G1516), adults July-September 1964, MK; **L. Mask** (M1259), (M1465), adults July-September 1964, MK, (M1464), Ballinrobe, adult 1 August 1948, JRH. **MEATH: L. Sheelin** (N4482), Goreport Bay, IETS 1973/1974 adult, PG. **ROSCOMMON: L. Ree** (N0245), Yellow Island, ♂ 22 August 1958 (misidentified as *P. varia*), PHW, det. JPOC (BMNH). **SLIGO: L. Arrow** (G7711), adults July-September 1964, MK. **WESTMEATH: Athlone** (N0341), 5 adults 5a & 11 August 1888, [JJFXK], det. FCJF (HMAG); **L. Derravaragh**, IETS 1973/1974: (N4169), Coolure Bay, 2 adults, (N4168), near Derrya, adult, PG; **L. Ennell** (N4146), adults July-September 1964, MK, adult 28 September 1946, JRH; **L. Lene** (N5067), larva 1996/1997, JW, ♂♂♀ 11 August 1998, JPOC; **L. Owel** (N4156), adults July-September 1971, MK, IETS 2♂♂ 25 August 1973 (NMI), ♀ 17 September and 2♂♂ 1 October 1971, IFT, det. JPOC, IETS 1973/1974: (N4156), near Beach Hill, 4 adults, (N4056), Tullaghan shore, adult, (N4156), Lady's Island, adult, (N3657), near Carrickphilbin Island, 5 adults, (N3859), near Wattstown, 8 adults, (N4158), Gaynor Point, 3 adults, PG. **WICKLOW: Upper L. Bray** (O1315), 4♂♂3♀♀ 18 August 1973, JPOC; **Vartry Reservoir** (O2004), ♂ 24 August 1972, JPOC.

67. *Agrypnia pagetana* Curtis, 1835

FIGURES 167-168. Known Irish and European distributions of *Agrypnia pagetana*.



Agrypnia pagetana is local in Ireland but is particularly common in lakes and ponds in the Counties Cavan, Monaghan and Westmeath area. The cased larvae live amongst emergent vegetation such as reed-beds and are predacious. The mature ones

often have characteristic cases consisting of a single piece of hollow stem of reed or horsetail. Like other phryganeids, the larvae frequently leave their cases if disturbed by collecting. If given the chance, they will re-enter them. The species is widespread in Europe but appears to be absent from the Iberian Peninsula.

Flight period: April–September (24 April–1 September).

Counties and 10km squares: Cavan, Cork, Donegal, Fermanagh, Galway, Leitrim, Mayo, Monaghan, Roscommon, Sligo, Westmeath (11/32). The species is known from twenty-seven 10km squares (27/1019).

Published records

Morton, 1886 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* (**MONAGHAN:** Glaslough (H7241)). *Morton, 1892b* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* (**DONEGAL:** Ardara (G7390). **MONAGHAN:** Glaslough (H7241)). *Morton, 1916* (**MONAGHAN:** lake near Emyvale (H6843)). *Bracken and Murray, 1973* (**CORK:** L. Avaul (V9153)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7106), (H6906)). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Mill L. (H2438)).

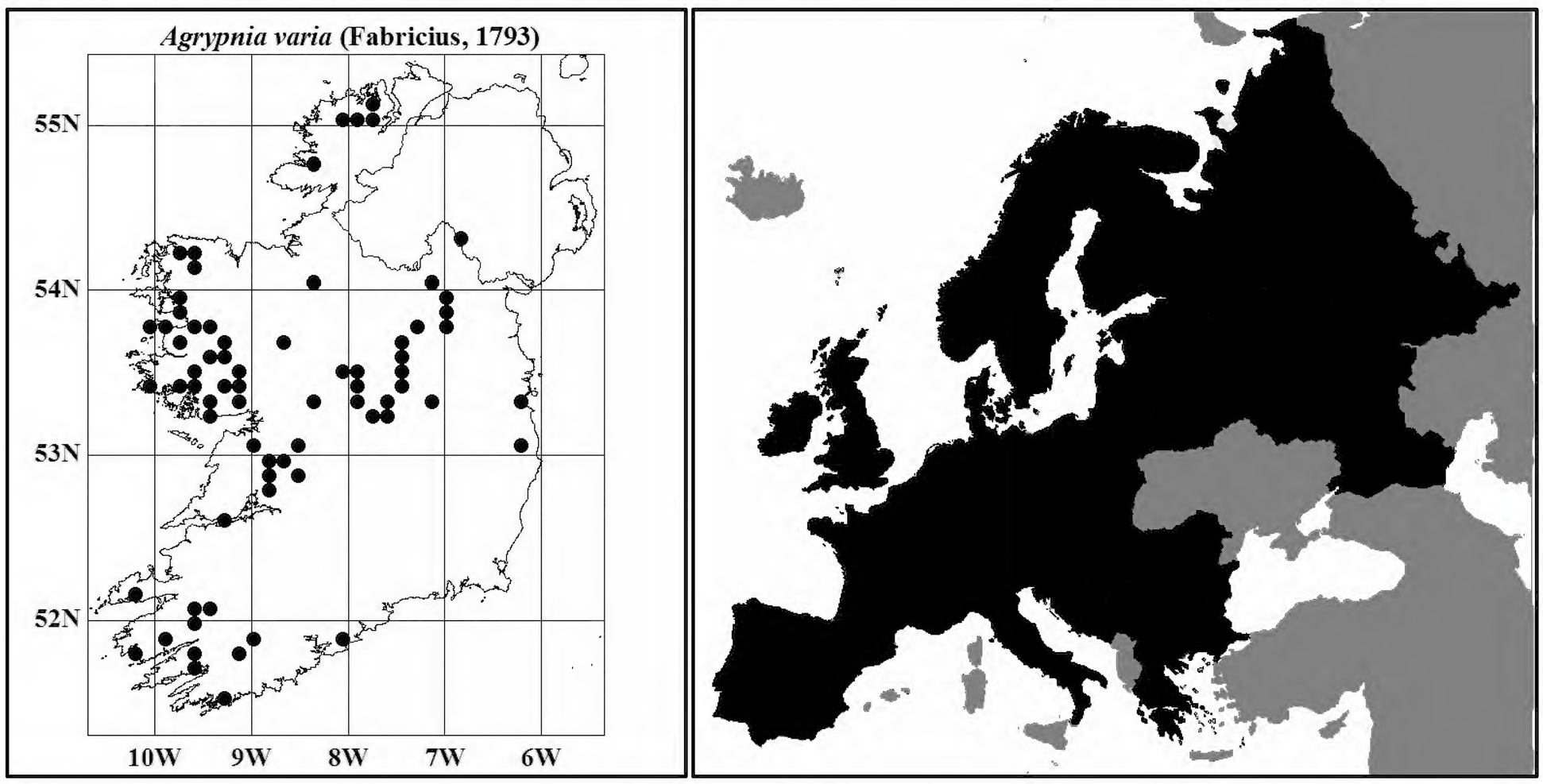
Unpublished records and voucher specimens

CAVAN: Annagh L. (H3912), adult, MK; **Corrakane L.** (H4000), small lake, ♂ 3 August 1981, JPOC/MAOC, det. JPOC, 3♂♂ 31 July & LT ♂♂ 4-5 August 1973, JPOC; **Drunad L.** (H7102), pond, larva & 3♂♂ 1 August 1973, JPOC; **L. Brackley** (H1921), 9♂♂ 4 August 1973, JPOC; **L. Cuilcagh** (N6389), ♂ 1 August 1986, CM/OSF (SINMNH); **L. Moneen** (G9828), 6♂♂3♀♀ 3 August 1973, JPOC; **L. Mullagh** (N6785), 5♂♂7♀♀ 10 August & 11♂♂4♀♀ 31 August 1972, 7♂♂♀ 1 August 1973, ♀ 20 May 1974, JPOC; **L. Oughter** (H3308), 3♂♂ 4 August 1973, JPOC (NMI); **L. Sheelin** (N4786), ♂2♀♀ 5 August 1973, ♂♂♀ 8 May 1976 (NMI), JPOC; **L. Sillan** (H6906), reed bed, 2 larva 26 March 1973, JPOC (NMI), LT 47♂♂ 31 July-1 August 1973, JPOC; **L. Tacker** (H6908), ♂ 1 September 1972, JPOC; **Muddy L.** (H7205), 5♂♂5♀♀ 1 August 1973, JPOC; **R. Annalee** (H6806), above L. Sillan, ♂ 27 July 1972, JPOC. **CORK: L. Avaul** (V9153), adults May-September 1969, MK. **FERMANAGH: Mill L.** (H2438), near Bellanaleck, swept 2♂♂ and LT 3♂♂ 26 August 2014 (NMI), LT ♂♂ 1 September 2015, JPOC/MAOC, det. JPOC. **GALWAY: Hackett L.** (west side) (M3049), Lisdonagh, MT 2♂♂ 12-26 June 2014, JC, det MG. **LEITRIM: Killegar Estate** (H2507), LT ♂ 16 August 1991, SW, det. JPOC. **MAYO: Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults May-September 1964, MK; **L. Mask** (M1259), (M1465), adults May-September 1964, MK. **MONAGHAN: Emyvale** (H6843), ♂♀ 4-11 August 1916, conf. JPOC, Morton Coll. (NMS); **Glaslough** (H7241), ♂♂♀ 29-30 July 1885 (BMNH, NMS), ♀

12 August 1973, JPOC; **L. Moylemuck** (H6415), 20♂♂8♀♀ 27 July 1972, JPOC (NMI). **ROSCOMMON: L. O'Flynn** (M5878), 2♀♀ 10 August & ♂ 16 August 2001, JPOC. **SLIGO: Castledargan Lake** (L. Dargan) (G7228), adults May-September 1964, MK; **L. Gara South** (M6997), larva 1996/1997, JW. **WESTMEATH: Ballynafid** (N4060), small lake, ♀ 5 May 1987, JPOC; **L. Ennell** (N4146), adults May-September 1964, MK, (N4149), Mullingar, adults 1 June 1947, 24 April 1948, JRH, (N3947), reed bed, ♂ pupa ♂♂♀♀ 15 May 1973, JPOC; **L. Lene** (N5067), ♀ 11 August 1998, JPOC; **L. Sheelin** (N4381), Goreport, adult 11 August 1947, JRH, (N4281), Bog Bay, ♂ 17 June 1973, ♂♂♀ 8 May 1976 (NMI), JPOC.

68. *Agrypnia varia* (Fabricius, 1793)

FIGURES 169-170. Known Irish and European distributions of *Agrypnia varia*.



Agrypnia varia is widely distributed in Ireland. However, the species has not yet been discovered in the south-east due to the scarcity of suitable habitat. The larval case is tubular, formed spirally with cut pieces of shore weed, leaves or pieces of vegetable debris. The predacious larvae occur in bogs, pools, weedy ponds along with the reed beds and sheltered rocky shores of lakes. The species is widespread in Europe.

Flight period: (May–June) July–October (5 July–8 October). Adults were taken in an insect emergence trap on 25 May and in a Malaise trap between the 12 and 26 June.

Counties and 10km squares: Cavan, Clare, Cork, Donegal, Dublin, Galway, Kerry, Mayo, Monaghan, Offaly, Roscommon, Sligo, Westmeath, Wicklow (14/32). The species is known from seventy-one 10km squares (71/1019).

Published records

Morton, 1886 as *Phryganea* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* as *Phryganea* (**GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Ross Castle (V9488).

MAYO: Carrowbeg R. (M0084); Cushinsheen [Cushinsheeaun] (M0482) and Prospect (L9581) Laoghs. **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan (N0446) [L. Ree]; Waterston [Waterstown] (N1045)). *King and Halbert, 1910* as *Phryganea* (**DONEGAL:** [L.] Akiboon (C0618); Askerry (C0919), Gorteen (C0818), Keel (C1524), Muethin and Sproule's (C1018) Loughs; Clonkillybeg [L.] (C1219); Glenbeagh (B9918) [Owenbeagh R.]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244) and Maumwee [Manwee] Loughs (L9748), (L9738). **KERRY:** [Killarney], Ross Castle (V9488). **MAYO:** Carrowbeg. R. (M0084); Cushinsheen [Cushinsheeaun] (M0482) and Prospect (L9581) Loughs. **MONAGHAN:** Glaslough (H7241). **OFFALY** [King's County]**:** Edenderry (N6332). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan (N0446) [L. Ree]; Waterstown (N0946)). *Halbert, 1912* as *Phryganea* (**MAYO:** Louisburgh (L8080); Mulranny (L8296); Westport (L9984)). *Mosely, 1927* as *Phryganea* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Phryganea* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Phryganea* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Bracken and Murray, 1973* as *Phryganea* (**CORK:** L. Aderry (W9373); L. Avaul (V9153). **KERRY:** L. Kilbrean (W0093)). *Speight, 1977* as *Phrygaena* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan (N0446)]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* as *Phryganea* (**CAVAN:** L. Sillan (H7106), (H7106), (H6906). **WICKLOW:** L. Dan (O1502)). *O'Connor and Wise, 1984* as *Phryganea* (**KERRY:** L. Leane (V9490), (V9686); Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Crushell, 2008* (**OFFALY:** Clara Bog, Shanley's L. soak lake (N2330)). *Hannigan and Kelly-Quinn, 2012* (**MAYO:** Knockmoyle Bog (F9723), pools; Owenirragh Bog (F9436), pools, hollows). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lakes (R5088), 273m, (R5188), 262m. **GALWAY:** upland lake (M6701), 183m, lowland lakes (M0329), (M0329), (M0229), (M0929), (M0927)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685)). *Hannigan and Kelly-Quinn, 2014* (**IRELAND:** raised and blanket bog). *Anon, 2015a* (**OFFALY:** L. Boora (N1319)).

Unpublished records and voucher specimens

IRELAND: no locality, ♂♂, A. H. Haliday, conf. JPOC (NMI).

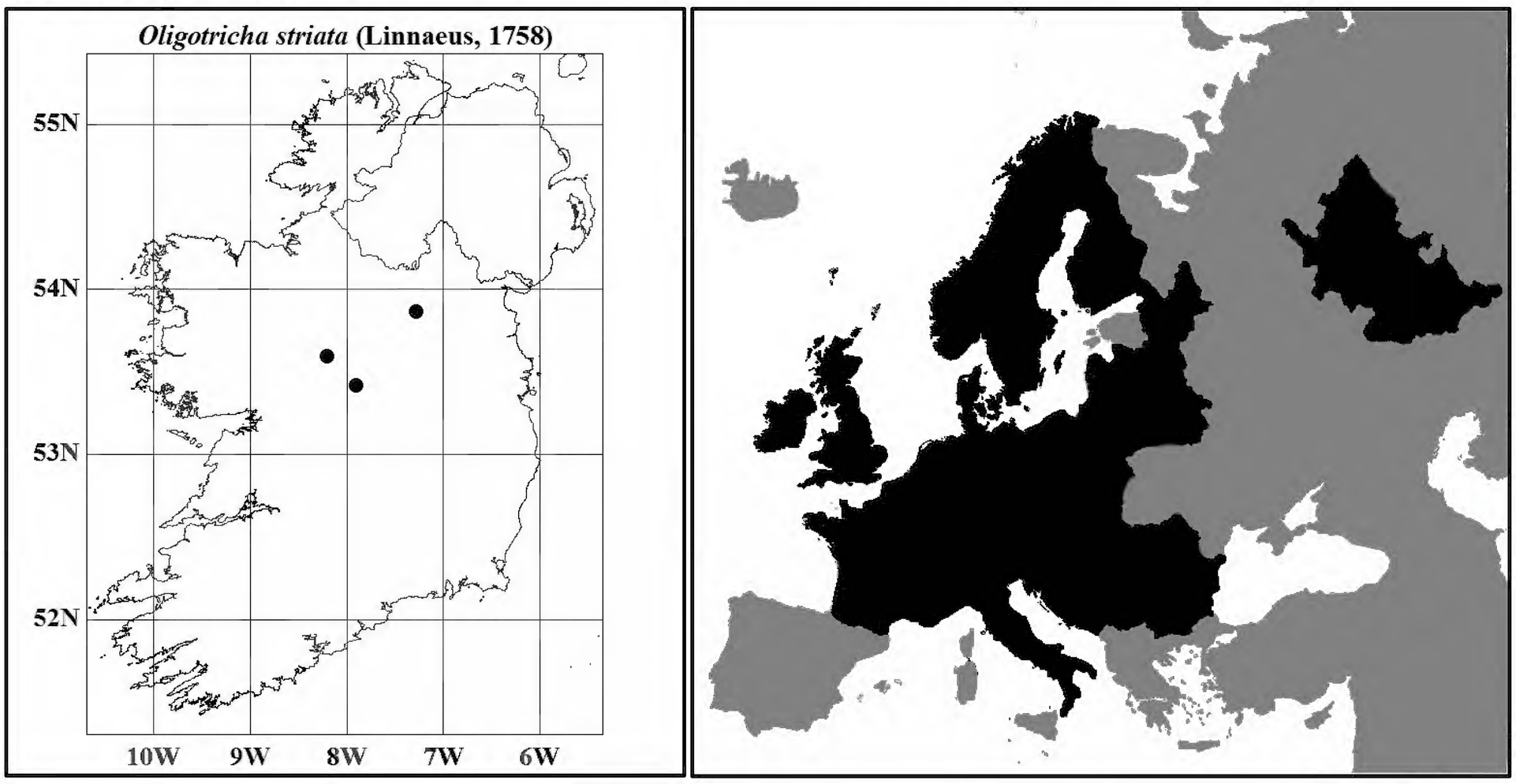
CAVAN: L. Coragh (H6114), Cootehill, adult 14 July 1965, JRH; **L. Cuilcagh** (N6389), ♀ 2 October 1972, 2 larvae reed bed & larva sheltered rocky shore, 29 March 1973, JPOC; **L. Mullagh** (N6785), 3 larvae reed bed, 3 April 1973, JPOC; **L. Sheelin**, adult 11 August 1947, JRH, (N4384), Kilnahard Bay, IETS 1973/1974 ♀, PG, det. JPOC, larva 8 May & 2 larvae 12 June 1975, KFW, det. JPOC; **L. Sillan**

(H6906), ♂ 30 August 1972, JPOC; **R. Blackwater** (N6383), ♀ 2 August 1973, JPOC. **CLARE: Clondorney Lake** [Cloondooney L.] (R4882), adults July-September 1964, MK; **L. Bunny** (R3796), MVLT adult 23 August 2003, GAC (per IDW), ♀ 31 August 1973, JPOC; **L. Derg** (R6878), 7♂♂16♀♀ LT 2-3 September 1973, JPOC (NMI); **L. Derrygeeha** (R1556), ♀ 8 July 1973, JPOC; **L. Graney** (R5691), ♀ 3 September 1973, JPOC; **Teereen L.** (R4671), LT ♂ 11-12 July 1973, JPOC. **CORK: Glengarriff Wood** (V9057), ♀ 7 July 1985, JPOC; **L. Abisdealy** (W1331), south of Skibbereen, MVLT ♂2♀♀ 15-16 August 1992, KGMB, det. JPOC; **L. Aderry** (W9373), adults July-September 1969, MK; **L. Allua** (W1965), ♂ 16 August 1985, KGMB, det. JPOC; **L. Avaul** (V9153), adults July-September 1969, MK; **The Gearagh** (W3371), 20 July 1960, MK, det. JRH. **DONEGAL: Ardara** (G7390), sandhills, ♂ 25 July 1892, WFJ (misidentified as *A. obsoleta*), det. JPOC; **Clonkillybeg** [L.] (C1219), 2 adults 13 July 1891, JJFXK (HMAG) (per EGH); **Glenbeagh** (B9918), adult 16 July 1891, JJFXK (HMAG) (per EGH); **Glenveagh National Park** (C0423), MVLT ♂ 11 August 1984, KGMB, det. JPOC; **L. Askerry** (C0919), 2 adults 18 July 1891, JJFXK (HMAG) (per EGH); **L. Keel** (C1524), 11 adults 23 July 1891, JJFXK (HMAG) (per EGH); **L. Mnephin** [L. Mnafin] (C0919), 2 adults 18 July 1891, JJFXK (HMAG) (per EGH); **Loughs Reelan** (C1327) **& Salt** (C1226), adult 14 July 1891, JJFXK (HMAG) (per EGH). **DUBLIN: Seapoint** (O2229), LT, adult, BPB, det. JRH. **GALWAY: Brierfort** (M5870), edge of Coolcam Turlough, adult 11 August 2010, CC, conf. MG; **Callownamuck Bog** (M2139), LT 3♀♀ 13 August 2014, MG/CC, det. MG; **Hackett L.** (west side) (M3049), Lisdonagh, MT ♀ 12-26 June 2014, JC, det MG; **Inverin** (M0822), adults 17 July-2 August 1926, MEM (BMNH); **L. Acalla** [Callow L.] (M7234), adult, MK; **L. Corrib** (M1745), adults July-September 1964, MK, (M2531), Hurney's Point [near Moycullen], MVLT ♀ 12 August & 2♀♀ 16 September 2003, KGMB, det. JPOC, (M2341), Middle, ♂ 7 August 1980, BC, conf. JPOC, (M2531), Hurnies, larva 23 March 1983, DOK, conf. JPOC, (M2741), Cloonmore, LT ♀ 22 July 2014, MG/CC, det MG, (M2341), Knockferry, LT ♂ 21 August 2014, MG/CC, det. MG; **L. Mask** (M0957), Kilbeg Lower, LT 2♀♀ 16 August 2014, MG, **Maummeen L.** (L6541), Ballyconeely, ♀ 31 July 1994, KGMB, det. JPOC (NMI); **Oughterard** (M1343), ♂ 3-9 August 1926, MEM (BMNH); **pool** (L8440), Cashel Bog Road, north-west of Cnoc Mordáin, 5 larvae 4 October 2014, MG/CC, det. MG; **Roundstone Bog** (L6847), opposite L. Beaghcauneen, adult 6 July 2012, CC, conf. MG. **KERRY: Kilbrean Lake** (W0093), adults July-September 1969, MK; **Killarney**, adult 1940, BPB, det. JRH; **Killarney Lakes**, trout stomachs, 2 larvae, UCD, det. JPOC; **L. Derriana** (V6573), ♂ 26 August 1973, JPOC; **Muckross Lake** (V9485), ♂ LT 27-28 July 1973, JPOC (NMI), IETS, 2♂♂2♀♀ 25 May, ♀ 25 July, 2♀♀ 4 August & 2♀♀ 18 August 1972, det. JPOC; **Slievanea** (Q5006), Dingle [L. Doon], adult 22 August 2003, GAC (per IDW). **MAYO: Clare Island** (L6985), larvae, peaty lakes, SF (det. IDW), MT ♂♀ 13 July 1998, SF, conf. JPOC (NMI); **Glenamoy Bog** (F9033), light ♂ 12 July

1973, CD, det. JPOC; **L. Carra** (M1673), adults July-September 1964, MK; **L. Mask** (M1259), (M1465), adults July-September 1964, MK; **L. Namucka** (L8275), Louisburg, ♀ 11 July 1910, JNH, conf. JPOC (NMI); **Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT ♀ 30 May-20 June 1997, MCDS, det. JPOC. **OFFALY: Edenderry** (N6332), ♂ 19 September 1892, conf. JPOC (NMI); **Mongan Bog** (N0330), ♂♂ LT 5 July 1983, JAG, det. JPOC; **Pallas Lake** (N2719), adult July 1957, JRH. **SLIGO: L. Arrow** (G7711), adults July-September 1964, MK. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 14 July 1888, JJFXK (BMNH); **Coosan** (N0544), Creaghduff, MVLT ♂♀♀ 17 August 1980, JS, det. JPOC (NMI); **L. Derravaragh**, IETS 1973/1974: (N4169), Coolure Bay, 6 adults, (N4168), near Derrya, adult, PG; **L. Ennell** (N4146), July-September 1964, MK, (N3944), Robin's own shore, IETS 1973/1974 adult, PG; **L. Owel** (N4156), adults July-September 1971, MK, IET 4♂♂2♀♀ 10 August 1971, IFT, det. JPOC (NMI), also IETS ♂♀ 9 September & ♀ 17 September, ♀ 8 October 1971, IFT, det. JPOC, IETS 1973/1974: (N4156), near Beach Hill, 9 adults, (N4056), Tullaghan shore, 2 adults, (N4056), Srudoora Island, 5 adults, (N4156), Lady's Island, 8 adults, (N3657), near Carrickphilbin Island, 9 adults, (N3859), near Wattstown, 5 adults, (N3960), Clonhugh shore, 2 adults, (N3959), off Woodlands Shore, adult, (N4158), Gaynor Point, 5 adults, PG. **WICKLOW: L. Dan** (O1502), larvae 1971, 29 larvae reed bed & 2 larvae sheltered rocky shore, 27 April 1973, ♀ 4 August (NMI) & ♀ 12 August 1973, (O1503), ♂ 24 August 1972, JPOC.

69. *Oligotricha striata* (Linnaeus, 1758)

FIGURES 171-172. Known Irish and European distributions of *Oligotricha striata*.



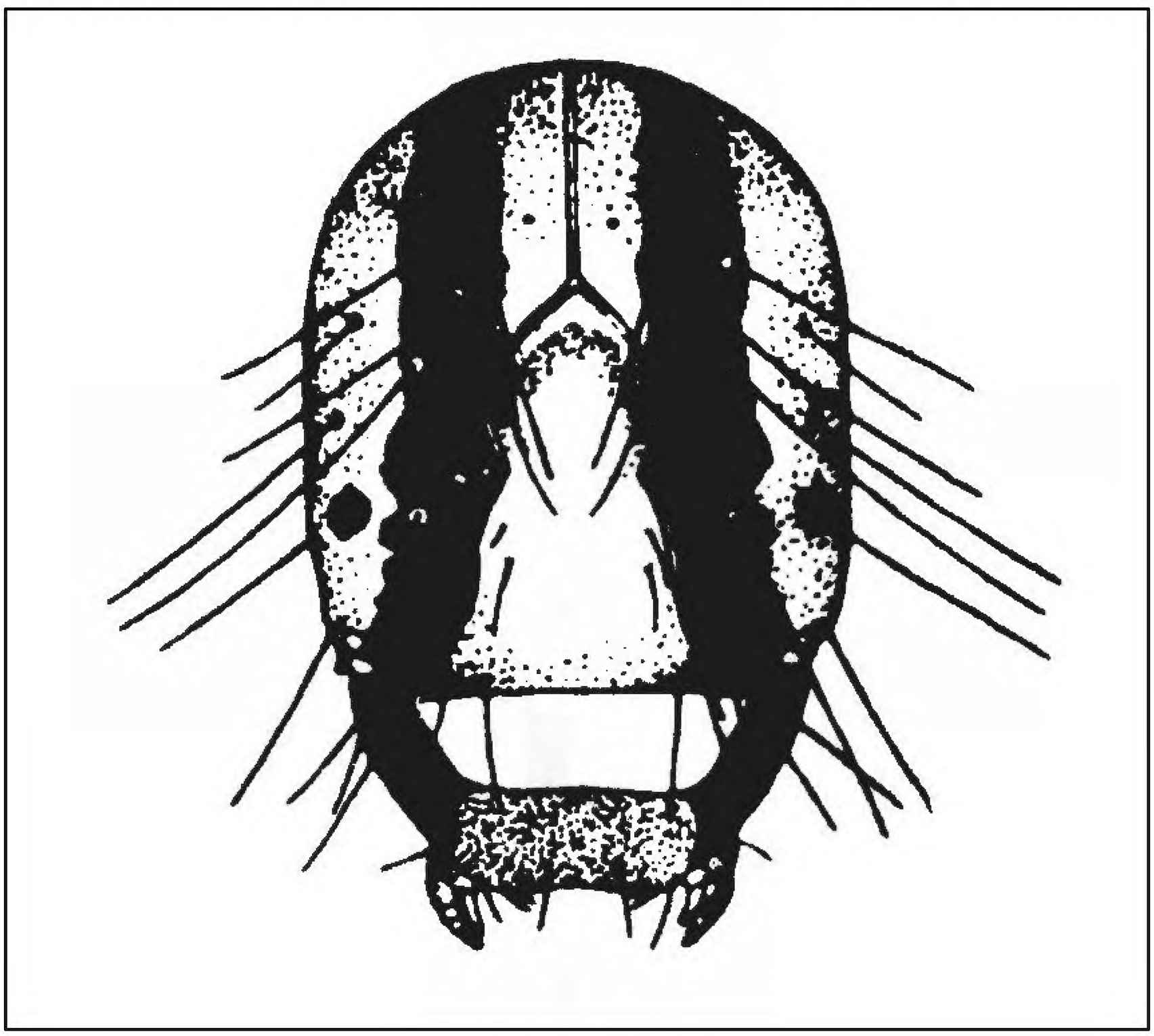
Oligotricha striata is a rare and local species in Ireland. Only three adults have been collected. The larval stage has not been taken. This is surprising in view of the research carried out on the macroinvertebrates of Irish bogs (see Hannigan and Kelly-

Quinn, 2014). In Britain, the cased larvae live in pools and ditches with abundant *Sphagnum* moss (Barnard and Ross, 2012). The species may have been affected by the widespread destruction of the Irish bogs. The larvae are predacious and, abroad, were observed to feed on frog (*Rana temporaria*) eggs in the field and also in the laboratory. Laboratory experiments revealed that the larvae preferred amphibian eggs to plant matter. The jelly-like sheath of the eggs was easily penetrated. A larva consumed 1 to 2 eggs per day. The supply of such high quality food was found to accelerate the growth of the trichopteran larvae (Majecki and Majecka, 1996). The larval head is very characteristic, having two distinctive broad bands (Fig. 173). The larval case is shown (Fig. 174). The vegetable material is arranged spirally. The species is widespread in much of Europe.

Flight period: July–August (15 July and 26 August). Barnard and Ross (2012) give the British flight period as May–July.

Counties and 10km squares: Cavan, Roscommon, Westmeath (3/32). The species is known from three 10km squares (3/1019).

FIGURE 173. The larval head of *Oligotricha striata* (after Lepneva, 1966).



Published records

King, 1888a as *Neuronia ruficrus* (**WESTMEATH:** Bog of Allan [Allen] (N0639)).

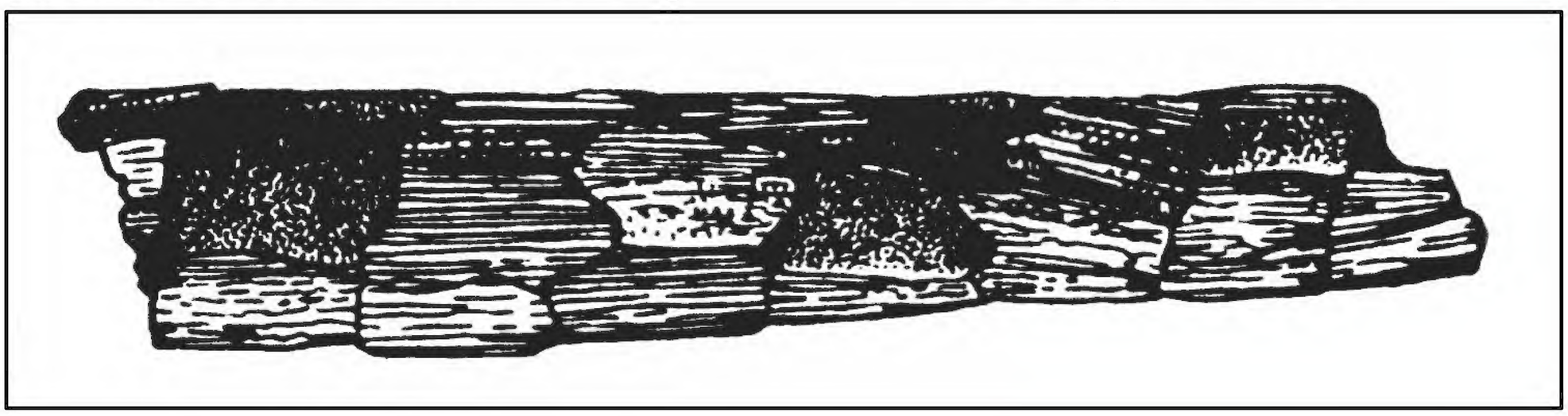
King and Halbert, 1910 as *Neuronia ruficrus* (**ROSCOMMON:** Mote Park (M8960).

WESTMEATH: Bog of Allen (N0639)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**ROSCOMMON**. **WESTMEATH**. Only two specimens). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** no recent Irish records). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** no recent Irish records). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

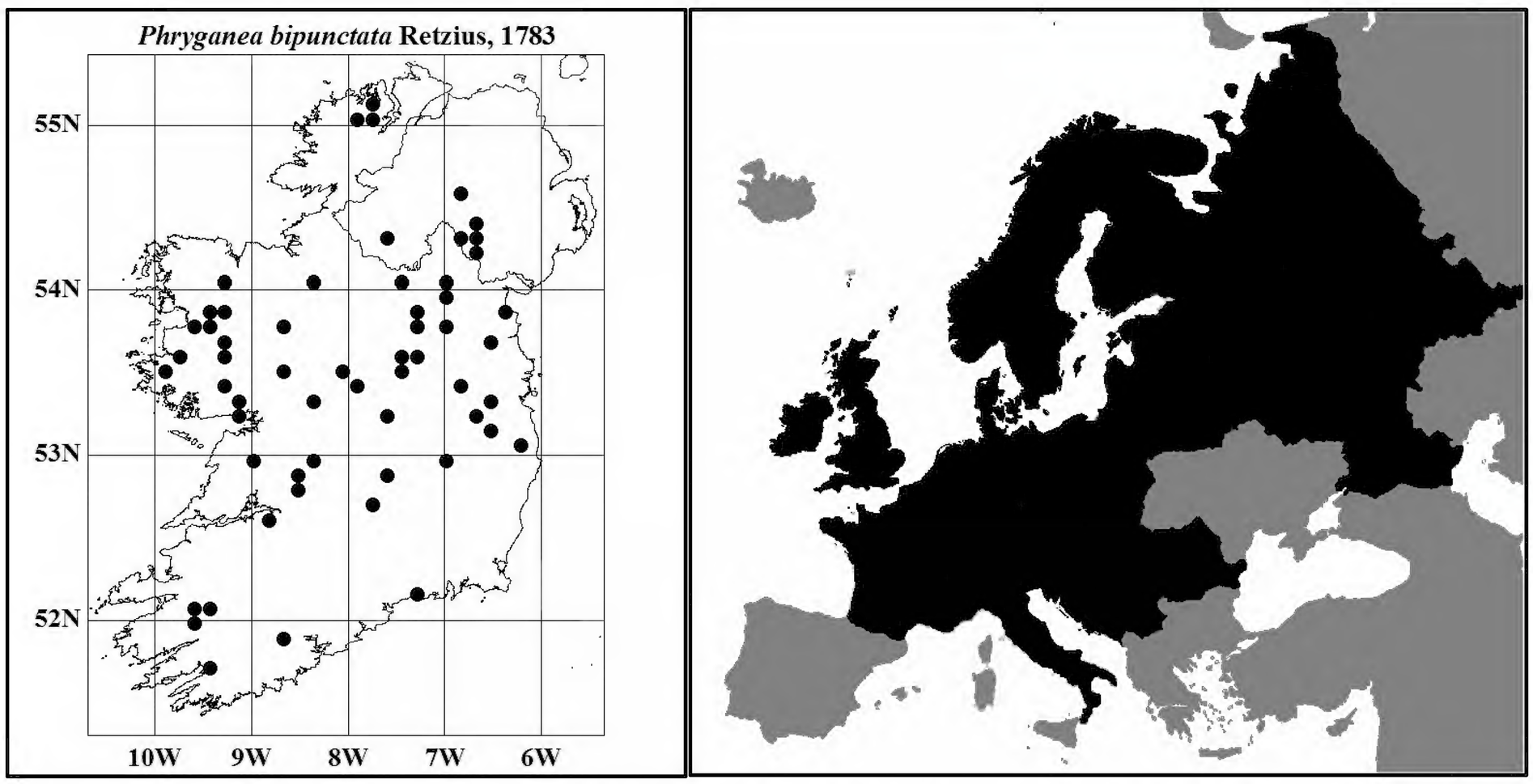
CAVAN: L. Sheelin (N4686), adult 26 August 1946, JRH. **ROSCOMMON: Mote Park** (M8960), ♂, conf. JPOC (NMI). **WESTMEATH: Athlone** (N0639) [Bog of Allen], ♂ 15 July 1888, [JJFXK], conf. JPOC (HMAG).

FIGURE 174. The larval case of *Oligotricha striata* (after Lepneva, 1966).



70. *Phryganea bipunctata* Retzius, 1783

FIGURES 175-176. Known Irish and European distributions of *Phryganea bipunctata*.



Phryganea bipunctata is widely distributed in Ireland with the exception of the south-east due to the scarcity of suitable habitat there. The larval case is tubular, formed spirally with cut pieces of shore weed, leaves or pieces of vegetable debris. The larvae, which are predacious, live in canals, ponds, lakes, reservoirs and rivers.

They have also been reported from raised and blanket bog (Hannigan and Kelly-Quinn, 2014). The species is widespread in much of Europe.

Flight period: May–September (12 May–9 September).

Counties and 10km squares: Armagh, Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Laois, Limerick, Louth, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wicklow (24/32). The species is known from fifty-eight 10km squares (58/1019).

Published records

Morton, 1883 as *Phryganea striata* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* as *Phryganea striata* (**ARMAGH:** Armagh (H8745); Loughgall (H9051). **MAYO:** Kip (M0880) and Knappagh [Knappaghbeg] (M0080) Laoghs. **MONAGHAN:** Glaslough (H7241); **ROSCOMMON:** Yew Point (N0146) [L. Ree]). *Johnson, 1896* as *Phryganea striata* (**ARMAGH:** Keady, Clay [Clea] Lake (H8332)). *King and Halbert, 1910* as *Phryganea striata* (**ARMAGH:** Keady (H8332); Loughgall (H9051), etc. **DONEGAL:** Fern (C1824), Reelan (C1327) and Sproule's (C1018) Loughs. **LOUTH:** Castlebellingham (O0595) [R. Glyde]. **MAYO:** Kip (M0880) and Knappagh [Knappaghbeg] (M0080) Loughs. **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]). *Halbert, 1912* as *Phryganea striata* (**MAYO:** Westport (L9984)). *Beirne and Harris, 1946* as *Phryganea striata* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Bracken and Murray, 1973* as *Phryganea striata* (**KERRY:** L. Kilbrean (W0093)). *Speight, 1977* as *Phrygaena striata* (**ROSCOMMON:** Yew Pt. [Point] (N0146)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* as *Phryganea striata* (**CAVAN:** L. Sillan (H6906)). *O'Connor and Wise, 1984* as *Phryganea striata* (**KERRY:** L. Leane (V9686)). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Lucey, 1998* (**IRELAND:** Rivers Barrow, Nore and Suir, larger slower parts). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 1 out of 207 river sites). *Anon., 2009b* (**LAOIS:** R. Erkina (S2878)). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *Atalah et al., 2010* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**CLARE:** Muckanagh L. (R3792). **GALWAY:** Nambrackkeagh [lake] (L8260)). *Baars et al., 2014* (**IRELAND:** recorded in 5 of 12 upland peatland lakes). *Hannigan and Kelly-Quinn, 2014* (**IRELAND:** raised and blanket bog). *Anon., 2015a* (**CLARE:** L. Bunny (R3695). **KERRY:** Killarney National Park (V9090)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Mill L. (H2438); Upper L. Erne (H2339)).

Unpublished records and voucher specimens

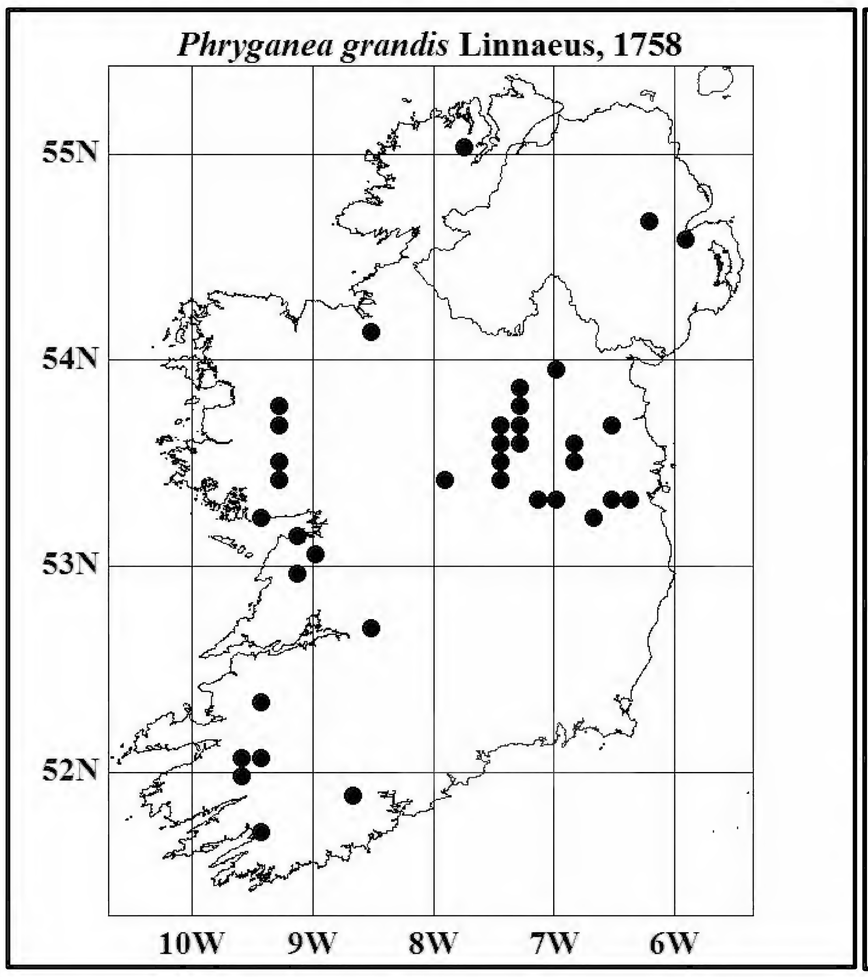
ARMAGH: Armagh (H8745), ♂♂ 25 May 1889, WFJ, conf. JPOC (NMI). **CAVAN: Annagh L.** (H3912), 2♂♂ 26 May 1973, JPOC (NMI); **L. Mullagh** (N6785), larvae 1996/1997, JW; **L. Sheelin** (N4686), adult 26 August 1946, JRH,

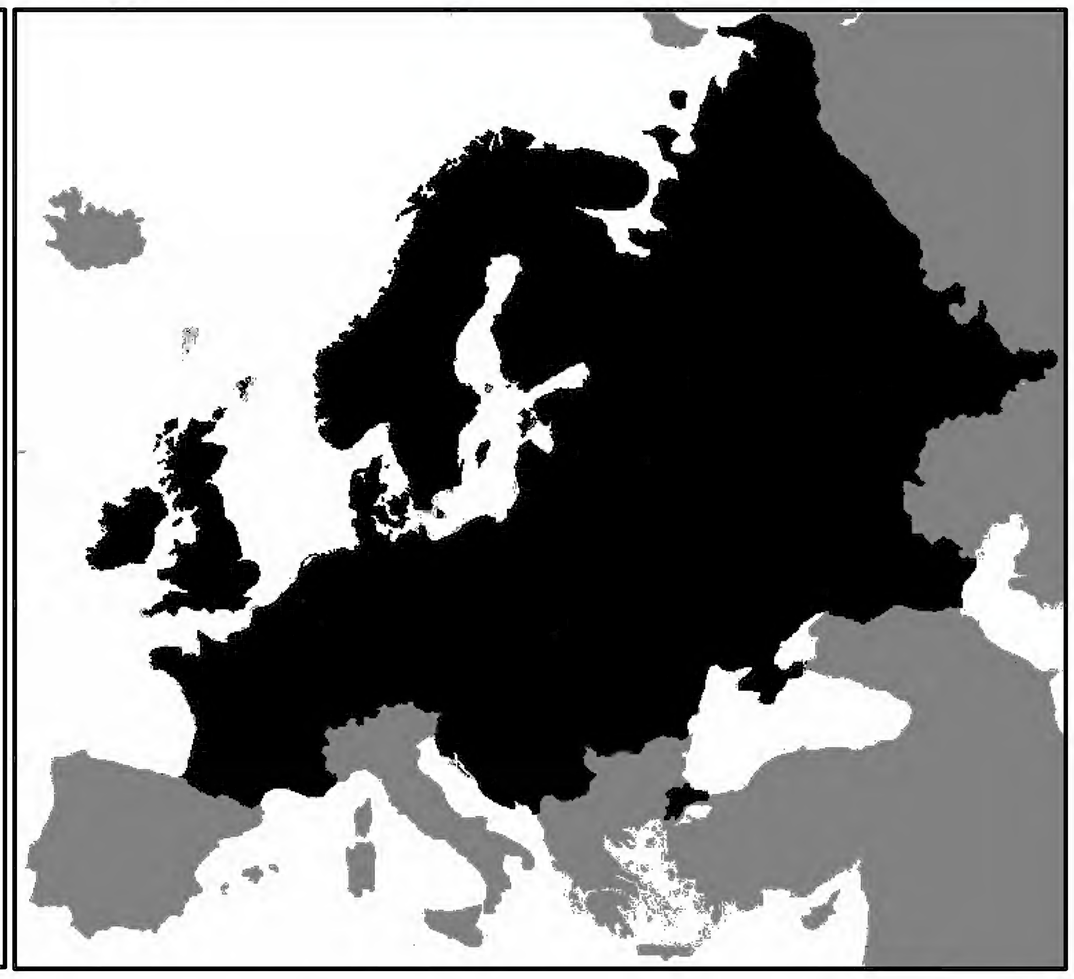
(N4786), ♂ 5 August 1973, JPOC, (N4685), Crover, IETS 1973/1974 adult, PG; **L. Sillan** (H6906), LT 10♂♂2♀♀ 31 July-1 August 1973, (H7007), light ♀ 22 July, ♀ 11 August & ♀ 31 August 1972, (H7106), ♂ 27 July 1971, 2♀♀ 9 August 1972, 4 larvae reed bed, 26 March 1973, (H6906), ♂ 21 July 1972 (NMI), JPOC. **CLARE: L. Derg** (R7186), Mount Shannon, adult 1 June 1947, JRH, (R7071), Killaloe, June 1948, Farran, det, JRH, (R6878), ♂ 13 July 1973, JPOC; **R. Fergus**, MK. **CORK: Reenydonegan Lake** (W0051), Bantry, adults June-August 1963, MK; **R. Lee** (W5671), adults May-August 1963, MK. **DUBLIN: R. Liffey** (O0335), Lucan, adult 12 May 1945, JRH; **Royal Canal** (O0236), Lucan, adult, MK. **FERMANAGH: Mill L.** (H2438), near Bellanaleck, ♂ 13 May 2015, JPOC/MAOC, det. JPOC (NMI); **Upper L. Erne** (H2339), Bellanaleck, ♀ 14 May 2015, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Connemara National Park** (L7157), RLT ♀ 18 August 1982, COK, det. JPOC (NMI); **Grange R.** (M5552), larva 2 September 1980, LW, conf. JPOC (NMI); **L. Acalla** [Callow L.] (M7234), adult, MK; **L. Corrib** (M1745), adults May-August 1964, MK, (M1146), Upper, ♂♀ 27 July 1980, BC, conf. JPOC (NMI), (M2930), Angliham, larva 7 October 1972, (M2531), Hurnies, larva 23 March 1983, DOK, det. JPOC; **R. Corrib** (M2926), NUI Galway, 2 larvae 7 March 2011, D. McHugh, conf. MG. **KERRY: Kilbrean Lake** (W0093), ♀ 19 June 1974, JPOC; **L. Leane** (V9685), larva September 1972, EJW (NMI). **KILDARE: Sallins** (N8823), [R. Liffey] MVLT ♀ 29 June 1977, MDCW, det. JPOC (NMI); **south Athy** (S6893) [R. Barrow], ♂ 1 June 1930, AWS, det. JPOC (NMI). **LIMERICK: Curraghchase Forest Park** (R4148), Skinner trap ♂ 23 May 2015, KGMB, det. JPOC. **LOUTH: Castle Bellingham** [Castlebellingham] (O0595), ♀, conf. JPOC (NMI). **MAYO: Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults May-August 1964, MK; **L. Carra** (M1673), adults May-August 1964, MK; **L. Conn** (G1516), adults May-August 1964, MK; **L. Mask** (M1259), (M1465), adults May-August 1964, MK. **MEATH: R. Blackwater** (N7739), Enfield, adult 14 June 1947, JRH; **R. Boyne** (N9972), Rosnaree, adult 13 May 1946, JRH. **MONAGHAN: L. Moylemuck** (H6415), ♂ 27 July 1972, JPOC. **OFFALY: Pallas Lake** (N2719), adult, MK, adult September 1958, JRH. **ROSCOMMON: L. O'Flynn** (M5878), ♀ 16 August 2001, JPOC. **SLIGO: L. Arrow** (G7711), adult June 1909, MEM (BMNH), adults May-August 1964, MK. **TIPPERARY: Kilmastulla R.** (R6867), larvae/adults 1976-1977, MAOC; **R. Drish** (S2163), larvae 5 September 1991, DAG/JML, det. JML. **TYRONE: Killyyneedan** (Sandholes) (H7972) [Killymoon R.], ♀ 25 June 1933, T. Greer, det. JPOC (NMI). **WATERFORD: Annestowns R. Valley Reserve** (S5000), small outflow stream from pond, larva 8 July 2014, MAOC/HOC, det. JPOC (NMI). **WESTMEATH: Athlone** (N0341) [R. Shannon], adult July 1888, JJFXK (TMM) (per IDW); **L. Derravaragh** (N4663), adults May-August 1964, MK; **L. Ennell** (N4146), adults May-August 1964, MK, adult 21 May 1945, JRH; **L. Owel** (N4156), adults May-August 1971, MK, IETS ♀ 29 July, ♀ 10 August & 2♀♀ 9 September 1971, adult 18 May 1972 (NMI), IFT, det. JPOC, (N3959), off Woodlands Shore,

IETS 1973/1974 adult, PG. **WICKLOW: Pollaphuca (Blessington) Reservoir** (O0108), many empty pupal skins & ♂ 22 July 1973, JPOC; **Vartry Reservoir** (O1903), LT ♂ 19-20 August 1973, JPOC, (O2004), Roundwood, LT ♂♀ 12 July 1983, HAD, conf. JPOC.

71. *Phryganea grandis* Linnaeus, 1758

FIGURES 177-178. Known Irish and European distributions of *Phryganea grandis*.





One of the earliest Irish caddisfly records is of *Phryganea grandis* and is cited by Curtis (1836a). Mr Hyndman of Belfast wrote to Curtis and described a female *P. grandis* entering the water to lay her eggs "The Phryganea was taken at the Botanic Garden, Belfast, the 27th May, 1833. I first observed it on the leaf of an aquatic plant, from which it crept down along the stem, under the water, very nearly a foot deep. It then appeared to have been disturbed by some Sticklebacks which approached it and seem inclined to attack it, and swam vigorously and rapidly beneath the water over to some other plants. I then took the insect up and found a large bundle of eggs of a green colour closely enveloped in a strong jelly-like substance, attached to the extremity of its abdomen. The bundle of eggs was of an oblong form, bent in the middle, and the two ends attached to the tail of the animal."

Malicky (2005) gives five subspecies but only ssp. *grandis* occurs in Ireland where it is widely distributed with the exception of the south-east due to the scarcity of suitable habitat there. The larval case is made of fragments of leaves uniformly cut, arranged in a spiral whorl and tapering down to the distal end. The predacious larvae occur in ponds, canals, lakes and rivers. The species is widespread in Europe except for the south.

Flight period: May–September (18 May–19 September).

Counties and 10km squares: Antrim, Cavan, Clare, Cork, Donegal, Dublin, Galway, Kerry, Kildare, Limerick, Mayo, Meath, Offaly, Sligo, Tipperary, Westmeath, Wicklow (17/32). The species is known from thirty-seven 10km squares (37/1019).

Published records

Curtis, 1836a (**ANTRIM:** Botanic Garden (J3372), Belfast). *King, 1888a* (**KERRY:** Ross Castle (V9488). **SLIGO:** Mackree Castle [Markree] (G6925). **WESTMEATH:** Shannon near Athlone (N0341)). *King and Halbert, 1910* (**ANTRIM:** L. Neagh (J1187). **DONEGAL:** L. Fern near Kilmacrennan (C1824). **DUBLIN:** R. Dodder near Templeogue (O1328). **GALWAY:** Ashford (M1454) [L. Corrib]; Cong (M1455) [L. Corrib]. **KERRY:** Ross Castle (V9488). **OFFALY** [King's County]**:** Edenderry (N6332). **SLIGO:** Markree Castle (G6925) [Unshin R.]. **WESTMEATH:** Shannon near Athlone (N0341)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Bracken and Murray, 1973* (**CORK:** L. Reenydonegan (W0051)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H6906)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane ((V9490), (V9686); Muckross Lake; Upper Lake [Killarney] (V8981), (V9181)). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 1 out of 207 river sites). *Millane, 2006* (**MAYO:** L. Carra (M1673), (M1777)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); Muckross Lake (V9685); R. Flesk (V9789)). *Anon., 2015a* (**KERRY:** Killarney National Park (V9489)).

Unpublished records and voucher specimens

CAVAN: Cavan, ♂ 12 July 1917, N. F. Foster, det. JPOC (NMI); **L. Sheelin**, adult 10 June 1935, JRH, (N4586), near Arley Point, IETS 1973/1974 2 adults, PG; **L. Sillan** (H7106), light 4♂♂5♀♀ 11 August 1972, JPOC (NMI). **CLARE: L. Bunny** (R3797), MVLT ♀ 3 August 1996, KGMB, det. JPOC; **near Ballyvaughan** (M2207), MVLT 20-31 July 1952, JDB (BMNH); **R. Fergus** (R2888), Corofin, adult July 1945, JRH. **CORK: Reenydonegan Lake** (W0051), Bantry, adults June-August 1963, MK; **R. Lee** (W5671), adults June-August 1963, MK. **DONEGAL: Clonkillybeg** [L.] (C1219), adult 13 July 1891, JJFXK (HMAG) (per EGH); **L. Fern** (C1824), 2 adults 23 June 1891, JJFXK (HMAG) (per EGH). **DUBLIN: Dublin** [R. Dodder (O1328)], ♂ 9 June 1895, conf. JPOC (NMI). **GALWAY: L. Corrib** (M1146), Upper, ♂♀ 27 July 1980, BC, conf. JPOC (NMI); **Oughterard** (M1343), ♂♀ 3-9 August 1926, MEM (BMNH). **KERRY: Muckross Lake** (V9685), Dundag Bay, IET ♀ 25 May 1972, JPOC. **KILDARE: Grand Canal** (N9225), near Devonshire Bridge, ♂ 28 June 1977, MDCW, det. JPOC (NMI); **Rye Water** (O0036), ♀ 18 May 1928, AWS, det. JPOC (NMI). **LIMERICK: R. Shannon** (R6663), Castleconnell, LT ♂ 12-13 July 1973, JPOC. **MAYO: L. Carra** (M1673), adults June-August 1964, MK. **MEATH: R. Boyne** (N9972), Rosnaree, adult 27 May 1945, JRH, (N8056), near Trim, 2 larvae 5 September 1988, MFOG, det. JPOC, (N8057), larvae 5 September 1988, DAG/JML,

det. JML. **OFFALY: Edenderry** (N6332), ♀ 9 September 1892, conf. JPOC (NMI); **R. Boyne** (N6433), near Edenderry, 17 July 1947, JRH. **TIPPERARY: Cahir** (R0620), Ballybrado House, ♂♀ 14 July 1986, KGMB, det. JPOC (NMI). **WESTMEATH: Athlone** (N0341) [R. Shannon], adults 9 July, 12a July, 18 July, 19 July & 20b July 1888, [JJFXK] (BMNH), 2♂♂ 7a July (one misidentified as *Phryganea striata* (now *P. bipunctata*)) & 2♂♂ 8 July 1888, JJFXK, det. and conf. JPOC (NMI); **L. Derravaragh** (N4663), adults June-August 1964, MK, IETS 1973/1974: (N4366), near Old Court, adult, (N3968), bay near R. Inny, adult, (N4168), near Derrya, 2 adults, PG; **L. Ennell** (N4146), adults June-August 1964, MK, (N3944), Robin's own shore, IETS 1973/1974 adult, PG; **L. Owel** (N4156), adults June-August 1971, MK, (N4159), IET ♀ 4 August 1971, IFT, det. JPOC (NMI), IETS 1993/1994: (N4156), near Beach Hill, 7 adults, (N4056), Srudoora Island, 10 adults, (N4156), Lady's Island, 2 adults, (N3657), near Carrickphilbin Island, 3 adults, (N3859), near Wattstown, 2 adults, (N3960), Clonhugh shore, adult, (N3959), off Woodlands Shore, adult, (N4158), Gaynor Point, adult, PG; **L. Sheelin** (N4381), off Goreport Point, IETS 1973/1974 adult, PG. **WICKLOW:** west, no locality, adult, G. B. Kershaw (BMNH).

[*Trichostegia minor* (Curtis, 1834)

The published larval record from a main stem drainage in County Cork requires confirmation. After a request to see voucher material, the senior author agreed (16 December 2014) to provide the relevant samples. However, despite further requests, no material has been made available. The larval stage is distinctive and over winters in stagnant leaf-filled pools and ditches which dry up or considerably diminish during summer (Wallace, Wallace and Philipson, 2003). The larvae may be able to tolerate lower oxygen tensions than any other British caddis and have been observed feeding only a couple of inches above the purple sulphur bacteria zone. The adult is secretive (Wallace, 1991).

Published record

Kavanagh and Harrison, 2014 (larval identification requiring confirmation).]

[BRACHYCENTRIDAE

Brachycentrus subnubilus Curtis, 1834

There was an Irish specimen in drawer 31 of the main pinned collection in the Natural History Museum, London (BMNH) under *Brachycentrus subnubilus* and labelled "Killarney 8/viii/87 Harwood Coll[ection] BM 1945-120". Collected by JJFXK, the caddisfly is a male *Hydropsyche* (det. JPOC) and merely had been placed in the wrong drawer.

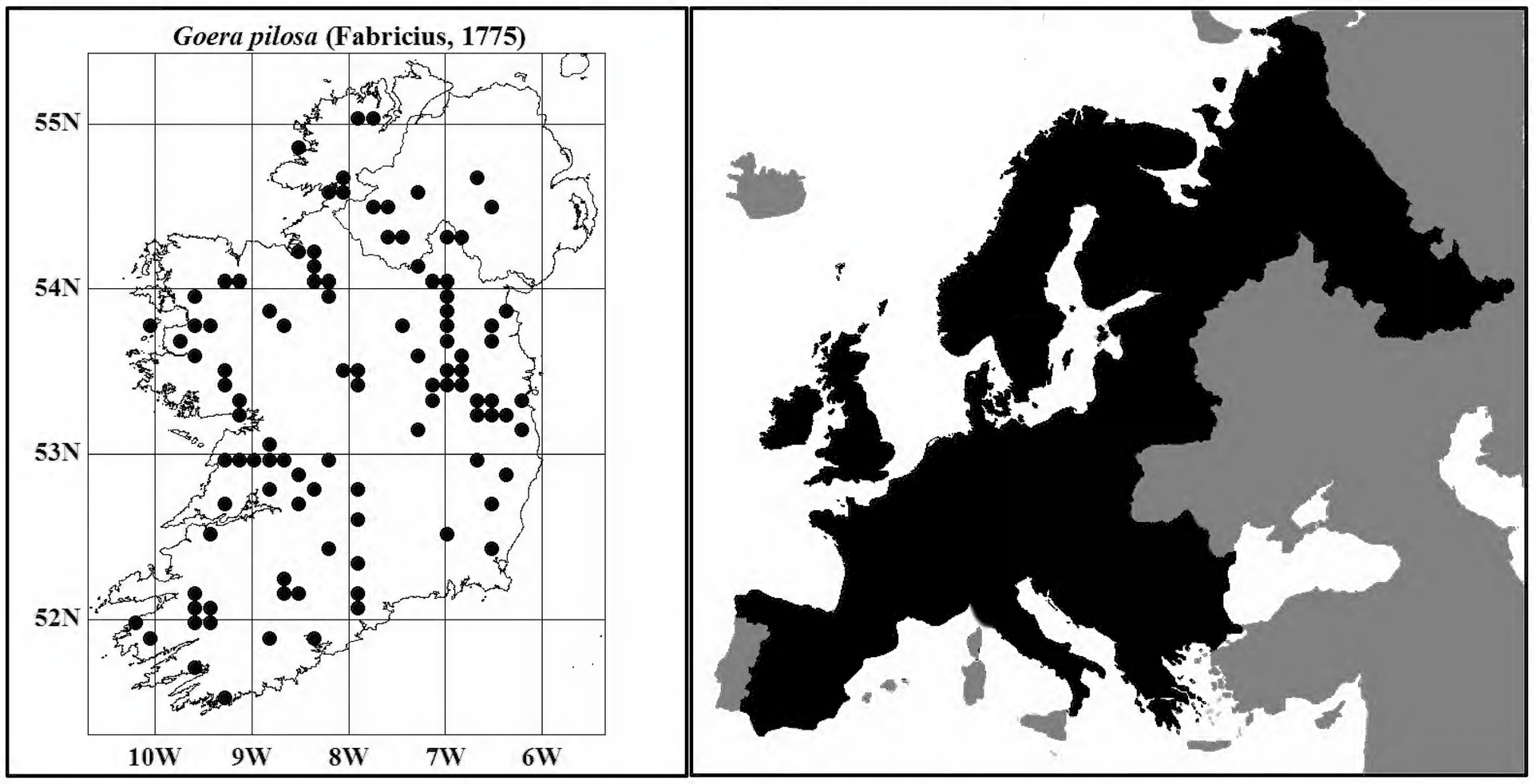
Published record

Botosaneanu and Malicky, 1978 (IRELAND) [This record is erroneous and evidently based on the above specimen.]]

GOERIDAE

72. *Goera pilosa* (Fabricius, 1775)

FIGURES 179-180. Known Irish and European distributions of *Goera pilosa*.



Goera pilosa is widely distributed in Ireland. The cased larvae occur on stony substrata in streams, rivers and on lake shores. They have unusual cases consisting of a strong tube of sand grains with larger rock fragments incorporated laterally. This additional ballast helps to prevent the larvae from being washed away. The case also has an extra re-inforcing layer of silk on the outside which gives even greater strength if it is tumbled about (Wallace, pers. comm.). The larvae scrape off epilithic algae with scoop-shaped mandibles. They can also protect themselves by withdrawing into their cases and closing off the opening with their head and parts of the first and second thoracic segments which form a plug. Elsewhere in Europe including Britain, goerid larvae are parasitized by the ichneumon wasp *Agriotypus armatus* Curtis. This parasitoid has not been found in Ireland. *G. pilosa* is widespread in Europe.

Flight period: May–September (28 May–1 September).

Counties and 10km squares: Armagh, Carlow, Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Laois, Leitrim, Limerick, Louth, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (27/32). The species is known from 103 10km squares (103/1019).

Published records

Morton, 1886 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* (**GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **KERRY:** Flesk R. (V9689); Ross Castle (V9488). **MAYO:** Carrowbeg R. (M0084); Cushinsheen [Cushinsheeaun L] (M0482), Doo (L8368), Kip (M0880) and Mount Brown [Kinlooey] (M0381) Laoghs. **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **SLIGO:** near Sligo (G7035). **WESTMEATH:** Coosan Point (N0446) [L. Ree]; near Athlone (N0341); Shannon (N0341)). *King and Halbert,*

1910 (**ARMAGH:** L. Neagh (Coney Island) (H9364). **CORK:** Mallow (W5598) [R. Blackwater]. **DONEGAL:** Clonkillybeg [L.] (C1219); Coolmore (G8566); Fern (C1824) and Irvine's (C1322) Loughs. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **KERRY:** R. Flesk (V9689); Ross Castle (V9488). **MAYO:** Carrowbeg R. (M0084); Cushinsheeaun (M0482), Doo (L8368), Kip (M0880) and Mount Brown [Kinlooey] (M0381) Loughs. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **SLIGO:** near Sligo (G7035). **WATERFORD:** Lismore (X0498). **WESTMEATH:** Coosan (N0446) [L. Ree]; Shannon near Athlone (N0341); etc. **WEXFORD:** Edenvale (T0427) [R. Sow]. **WICKLOW:** Calary (O2312)). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Frost, 1942* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Kennedy and Fitzmaurice, 1968a* (**CORK:** Connolly's Stream (Glashagarriff R.) (W4175)). *Fahy, 1972a* (**CORK:** (R6902). **LOUTH:** (N9882), (O0695)). *O'Connor and Norton, 1977* (**WESTMEATH:** Hare Island, L. Ree (N0446)). *Speight, 1977* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan Point (N0446)]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7007), (H6907), (H7106)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9290), (V9490), (V9788); Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1325)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 6 out of 70 sampled sites). *Kelly et al., 2003* (**TYRONE:** R. Lissan (H8280)). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune (V8991)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 22 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Anon., 2011* (**WEXFORD:** R. Slaney (S9830)). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**DONEGAL:** Kiltooris Lake (G6797); L. Eske (G9783). **MAYO:** Carrowkeribly [Ballycong L.] (G2611); L. Conn (G1810); Urlaur L. (M5188). **ROSCOMMON:** Cavetown L. (M8397); L. O'Flynn (M5879)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686), (V9488); Muckross Lake (V9485), (V9685); R. Flesk (V9789); R. Galey (R0139); R. Inny (V5572)). *O'Connor and Davy-Bowker, 2014* (**FERMANAGH:** R. Colebrooke (H3744); R. Finn (H4220); R. Glendurragh (H2265); R. Sillees (H2341). **TYRONE:** Ballynahatty Water (R. Owenreagh) (H4367); Quiggery Water (H4467)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Lower L. Erne (H1758)). *Anon., 2015a* (**GALWAY:** L. Corrib (M2926); **MAYO:** Clonbur Woodland (M1455)).

Unpublished records and voucher specimens

ARMAGH: L. Neagh (H9364), Coney Island, ♀ 30 June 1891, WFJ, conf. JPOC (NMI). **CARLOW: St Mullins** (S7237), stream entering R. Barrow, ♀ 5 July 2014,

JPOC/MAOC, det. JPOC. **CAVAN: L. Cuilcagh** (N6389), 2 larvae exposed rocky shore, 29 March 1973, ♂ 31 August 1986, JPOC; **L. Mullagh** (N6785), ♀ 10 August 1972, JPOC; **L. Sillan**, 3 larvae exposed rocky shore & larva sheltered rocky shore, 26 March 1973, (H7007), 2♂♂ 27 July 1971, lamp 16♂♂3♀♀ 27 July 1972, (H6906), LT ♀ 31 July-1 August 1973, JPOC; **L. Tacker** (H6908), ♂ 1 September 1972, JPOC (NMI); **R. Annalee** (H7205), below L. Sillan, ♀ 1 August 1973, (H6910), ♂ 27 July 1972, (H6806), above L. Sillan, 2♂♂ 27 July 1972, JPOC; **R. Inny** (N4081), below L. Sheelin, LT 2♂♂♀ 16-17 June 1973, JPOC; **R. Laragh** (H5210), LT ♂ 2-3 August 1973, JPOC. **CLARE: Cloon R.** (R1759), ♂ 8 July 1973, JPOC; **Cullenagh R.** (R1388), LT 9♀♀ 9-10 July 1973, JPOC; **Dromore Lake** (R3586), larvae 1996/1997, JW; **Knockalough** (R1463), LT ♀ 8-9 July 1973, JPOC; **L. Derg** (R6878), Tinarana Bay, 3♂♂ 13 July 1973 (NMI), 3♂♂ 17 June 1976, JPOC, (R6878), 2 larvae 28 July 1972, AFF, det. JPOC; **L. Graney** (R5691), larvae 1996/1997, JW; **Moyree R.** (R3689), 2♂♂ 11 July 1973, JPOC; **R. Ennistymon** (Inagh R.) (R1288), 3♂♂ 10 July 1981, JPOC; **R. Fergus** (R2591), above L. Inchiquin, 2♀♀ 1 September 1973, JPOC; **R. Rinne** (R4174), ♂ 12 July 1973, JPOC; **stream** (near Inchicronan L.) (R4086), larva & 2♀♀ 1 September 1973, JPOC. **CORK: Fota** (W7874), ♂ 24 July 1986, KGMB, det. JPOC; **Glengarriff** (V9256), adult July 1947, BPB, det. JRH; **Kilcoman [Bog]** (R5811), MVLT ♀ 20-21 June 1992, KGMB, det. JPOC; **L. Hyne** (W0927), wet seepage, ♂ 12 July 1999, PA, det JPOC; **Mallow** (W5598) [R. Blackwater], ♂, conf. JPOC (NMI). **DONEGAL: Coolmore** (G8566), ♂, conf. JPOC (NMI); **Coxtown** (G9271), lake near, ♂♀ 26 June 1981, JPOC; **Gartan L.** (C0516), adult July 1936 (BMNH). **DUBLIN: R. Dodder** (O1730), Clonskeagh, adult 15 June 1945, JRH. **GALWAY: L. Ballyquirke** (M2331), larva 1996/1997, JW; **L. Cutra** (R4698), MVLT ♀ 30 August 1996, KGMB, det. JPOC; **L. Nafooey** (L9560), north-west shore, 3♂♂ 12 July 2012, MG. **KERRY: Gap of Dunloe** (V8787), lakes, ♂ 10 July 1986, JPOC; **Killarney**, ♂ August, KJM (NMS); **Killarney Lakes**, 61 larvae, trout stomachs, UCD, det. JPOC; **L. Guitane** (W0285), 3♂♂ 3 July 1973, JPOC (NMI); **L. Leane** (V9686), boat house, ♀ 28 May 1974, larva reed bed & 79 larvae sheltered rocky shore, 10 April 1973, JPOC, (V9389), Library Point, 5 pupae July 1977, ANS, det. JPOC; **Muckross Lake** (V9485), ♂4♀♀ LT 27-28 July 1973, JPOC (NMI); **R. Ferta** (V5282), ♂ 6 July 1973, JPOC; **R. Flesk** (V9689), 7♂♂2♀♀ 25 June 1973 (NMI), ♀ 28 May 1974, JPOC; **R. Galey** (R0438), 8♂♂3♀♀ 8 July 1973, JPOC; **R. Maine** (Q8905), 2♂♂♀ 7 July 1973, JPOC; **stream** (Q8905), entering the Maine R., 3♂♂♀ 7 July 1973, JPOC. **KILDARE: R. Boyne** (N6643), larvae July 1990, DAG/JML, det. JML; **R. Rye** (O0036), Leixlip, adult, JRH; **Sallins** (N8823) [R. Liffey], ♀ 30 June 1977, MDCW, det. JPOC. **LAOIS: R. Barrow** (N4709), 6 larvae 8 September 1971, (N4509), larva 7 September 1971, AFF, det. JPOC. **LEITRIM: L. Gill** (G7933), larvae 19 July 1989, DAG/JML, det. JML. **LIMERICK: R. Shannon** (R6663), Castleconnell, LT 10♂♂3♀♀ 12-13 July 1973, JPOC. **MAYO: Clare Island** (L6985), ♀, SF, conf.

JPOC (NMI); **Westport** (L9984), 4♂♂♀, [JJFXK], conf. JPOC (NMI). **MEATH: R. Blackwater** (N7739), Enfield, adult 14 June 1947, JRH; **R. Boyne** (N9972), Rosnaree, adults 22 June 1946, 14 June 1947, JRH, (N8056), near Trim, 11 larvae 5 September 1988, MFOG, det. JPOC, (N8057), larvae 5 September 1988, DAG/JML, det. JML; **Trimblestown R.** (N6967), larvae April 1990 & July 1991, DAG/JML, det. JML. **MONAGHAN: Emyvale** (H6843), ♂♂♀ 20-30 July [1885-6], conf. JPOC, Morton Coll. (NMS). **OFFALY: R. Boyne** (N6332), near Edenderry, 17 July 1947, JRH. **ROSCOMMON: L. Key** (G8207), larva & ♀ pupa 17 July 1972, AFF, det. JPOC. **SLIGO: L. Arrow** (G7711), adults June-July 1964, MK; **L. Bo** (G7918), adults June-July 1964, MK; **L. Gill** (G7232), lake outflow, larvae 20 July 1989, (G7234), Hazelwood, larvae 20 July 1989, (G7331), Slish Wood, larvae 20 July 1989, (G7733), Inishfree, larvae 20 July 1989, DAG/JML, det. JML, (G7234), Hazelwood, 2♂♂ pupae 20 July 1989, JML, det. JPOC. **TIPPERARY: Kilmastulla R.** (R8072), (R7169), larvae/adults 1976-1977, MAOC; **Luska Quay** (R8289), ♀ 7 July 1986, KGMB, det. JPOC (NMI); **R. Ara** (R8735), u/s of Tipperary Town, larva 18 August 1971, AFF, det. JPOC; **R. Suir** (S0424), Cahir, ♂♂♀♀ 3 August 1986, CM/OSF (SINMNH), (S0522), Swiss Cottage, Caher [Cahir], ♂♀ 18 July 1990, JPOC, (S1267), larvae 19 September 1991, DAG/JML, det. JML, (S1255), larvae 10 March 1992, DAG/JML, det. JML. **WATERFORD: Killahaly Wood** (X0895), Blackwater Valley, MVLT 2♂♂ 18 July 1986, KGMB, det. JPOC (NMI); **Lismore** (X0498), ♂♀, conf. JPOC (NMI). **WESTMEATH: L. Derravaragh** (N4663), adults June-July 1964, MK; **Mongagh R.** (N5938), larvae June 1989, DAG/JML, det. JML; **R. Deel** (N6949), larvae April 1990, DAG/JML, det. JML. **WEXFORD: Wexford** [Edenvale (T0427)], ♂ 16 July 1902, JJFXK, conf. JPOC (NMI). **WICKLOW: Derry R.** (S9764), 14 larvae 20 September 1973, JPOC; **Ow R.** (T0981), 3♀♀ pupae 28 July 1973, JPOC; **R. Brittas** (O0218), ♂ 6 June 1973, JPOC; **R. Slaney** (S8892), LT ♂ 24-25 July 1973, JPOC.

73. *Silo nigricornis* (Pictet, 1834)

Silo nigricornis is widely distributed in Ireland. The cased larvae occur in rivers and streams. Like *Goera pilosa*, the case has ballast stones and the larvae scrape off epilithic algae. The species is widespread mainly in western and southern Europe.

Flight period: May–September (13 May–1 September).

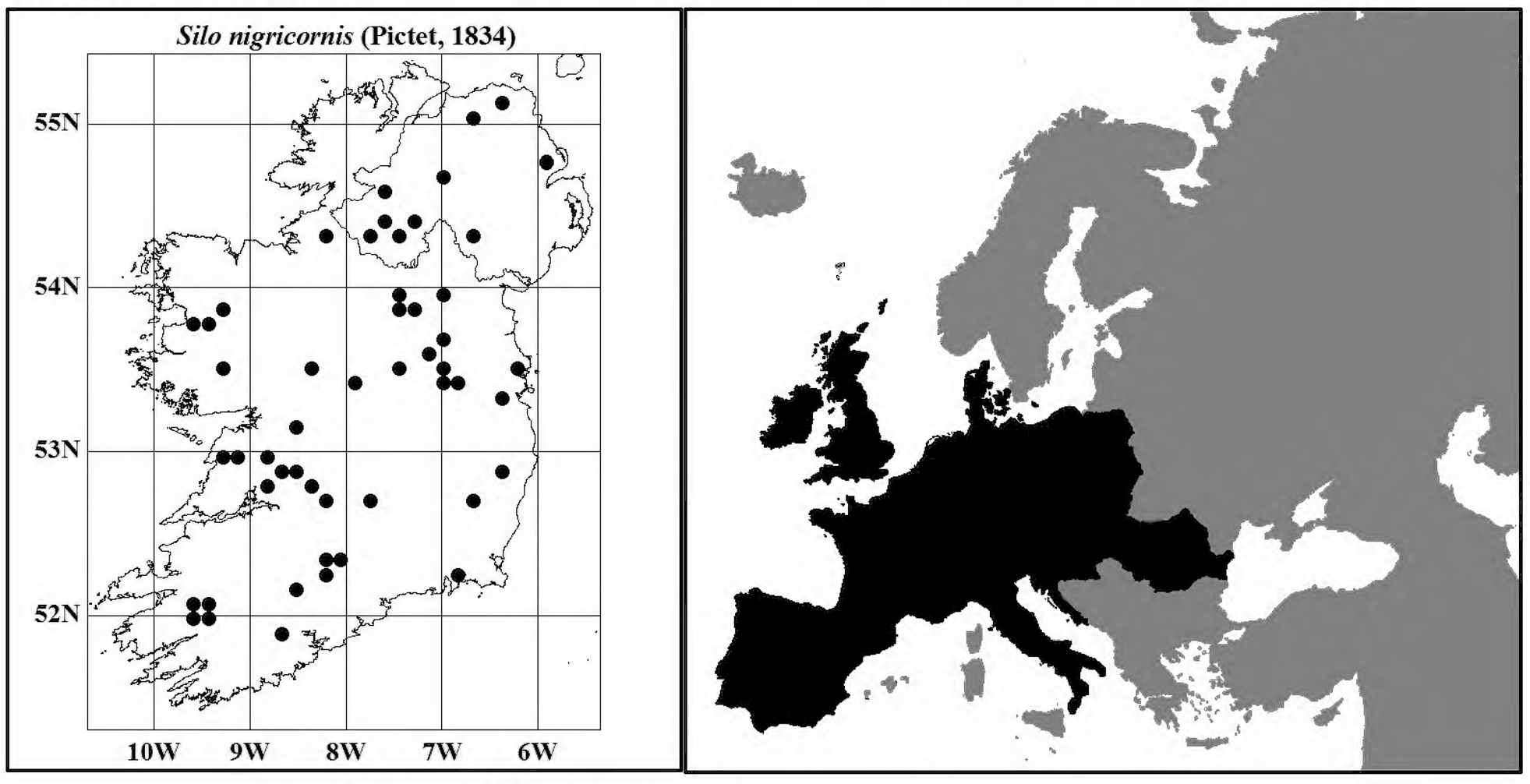
Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Dublin, Fermanagh, Galway, Kerry, Leitrim, Mayo, Meath, Tipperary, Tyrone, Westmeath, Wexford, Wicklow (19/32). The species is known from fifty-one 10km squares (51/1019).

Published records

King, 1888a (**KERRY:** Denough [Deenagh] (V9792) and Flesk (V9689) Rivers; Dinish (V9385)). **MAYO:** Carrowbeg R. (M0084); Mount Brown [Kinlooey] (M0381) Laogh. **WESTMEATH:** Ballykeeron [Ballykeeran] (N0744); Killinure

(N0745)). *King and Halbert, 1910* (**DUBLIN:** Templeogue (R. Dodder) (O1328). **KERRY:** Deenagh (V9792) and Flesk (V9689) Rivers; Dinish (V9385). **MAYO:** Carrowbeg R. (M0084); Mount Brown [Kinlooey] L. (M0381). **WESTMEATH:** Ballykeeran (N0744); Killinure (N0745)). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Praeger, 1950* (**DUBLIN**. **KERRY**. **MAYO**. **WESTMEATH**). *Fahy, 1972a* (**GALWAY:** (M6914). **TIPPERARY:** (R8114)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Wise, 1984* (**KERRY:** Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 4 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (V9890)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 17 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Atalah et al., 2010* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** R. Dervock (D0233); Six Mile Water (J3195). **ARMAGH:** R. Callan (H8539). **DERRY (LONDONDERRY):** R. Mayoghill (C8819). **FERMANAGH:** Lisblake Burn (H1637); Lisnabane Burn (H3744); R. Ballinamallard (H2853); R. Boho (H1344). **TYRONE:** R. Cleen (H4748); R. Coolaghty (H2567); R. Owenkillew (H6885)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Tar (R9419), (R9019), (R8919), (R9117), (R9416)). *Anon., 2015a* (**MAYO:** Cong (M1455)).

FIGURES 181-182. Known Irish and European distributions of *Silo nigricornis*.



Unpublished records and voucher specimens

CARLOW: Altamont Gardens (S8665), outlet of ornamental pond, ♀ 9 June 1991, JPOC/MAOC, det. JPOC. **CAVAN: L. Sheelin**, adult 4 June 1946, JRH, (N4786), stream at Crover, 10 August 1947, JRH; **R. Erne** (N4293), near Derrin Bridge, 2♂♂

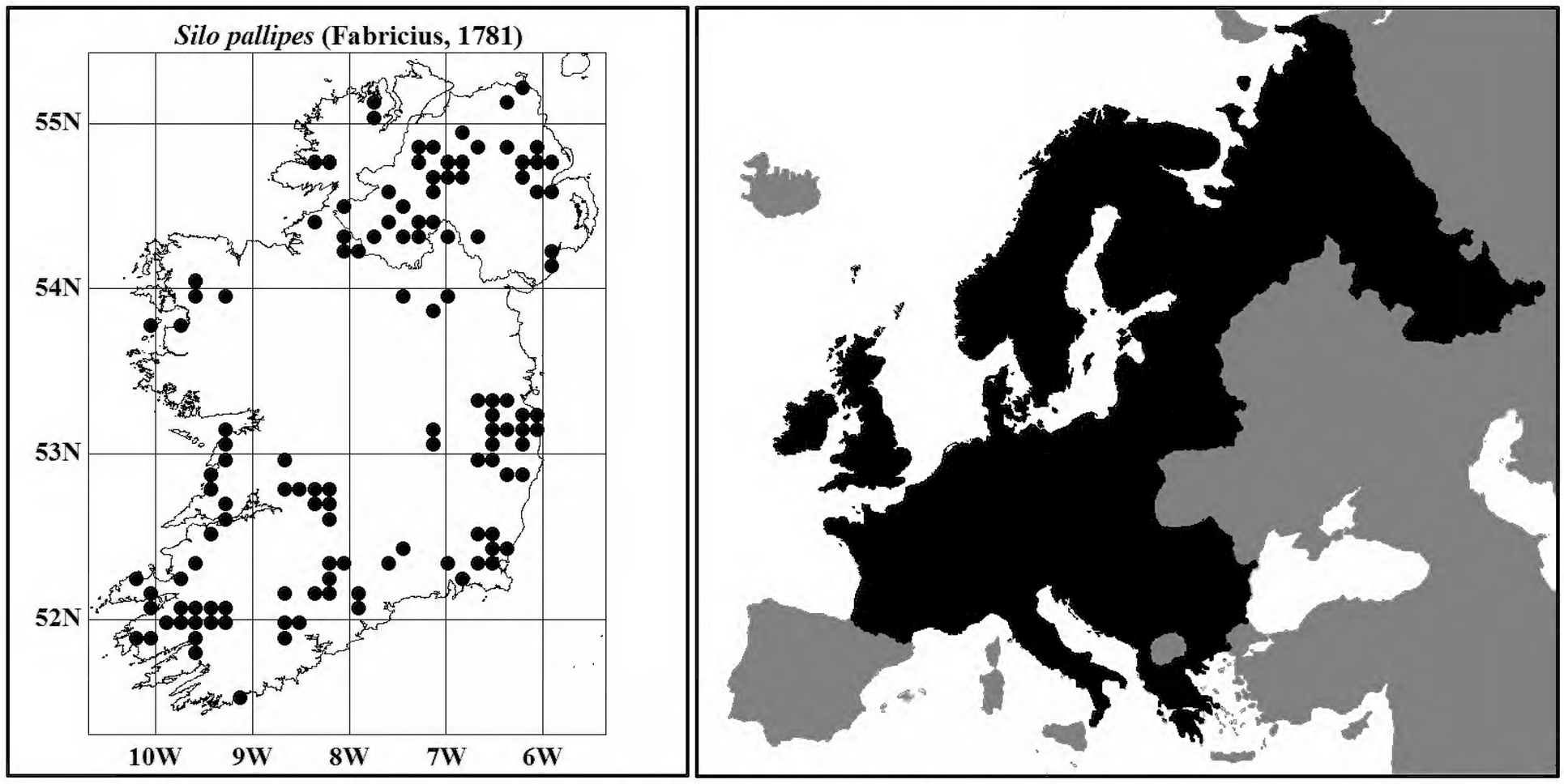
16 June 1973, JPOC; **stream** (N3996), ♂ 5 August 1973, JPOC; **stream** (N3996), near Bellananagh, ♂ 5 August 1973, JPOC (NMI); **stream** (N6697), near Baileborough, 14♂♂3♀♀ 20 May 1974, JPOC. **CLARE: L. Derg**, pupae & cases 28 July 1972, AFF, det. JPOC (NMI), (R6878), 8 larvae 28 July 1972, AFF, det. JPOC; **R. Fergus** (R2591), above L. Inchiquin, ♀ pupa 1 September 1973, JPOC; **R. Inagh** (R1188), adults May-September, MK; **R. Rinne** (R4174), larva 12 July 1973, JPOC; **stream** (R4086), ♂♀ pupae & ♂ 1 September 1973, JPOC (NMI); **stream** (R5376), 3 larvae 12 July 1973, JPOC. **CORK: Rahan** (W6398), marshy area near small river, light ♀ June-September 1988, PS, det. JPOC; **R. Lee** (W5671), adults May-September, MK. **DUBLIN: R. Broadmeadow** (O1848), 3 larvae 22 September 1971, AFF, det. JPOC. **GALWAY: Killian R.** (M7449), Carrowmore, road bridge u/s confluence with Shiven R., 2 larvae 12 May 2012, MG. **KERRY: Killarney**, adult 7a August 1887, [JJFXK] (BMNH); **R. Cloghereen** (V9786), near Blue Pool, ♂♀ 28 May 1995, JPOC; **R. Fergus** (V9689), ♂ 28 May 1974, (V9789), ♂ 3 July 1973, JPOC; **R. Flesk** (V9890), larva April 1972, EJW (NMI). **LEITRIM: Bonet R.** (G8444), larvae 25 June 1991, DAG/JML, det. JML. **MAYO: Castlebar streams** (M1390), adults May-September, MK; **Westport** (L9984), 2♂♂♀, JJFXK, conf. JPOC (NMI). **MEATH: R. Blackwater** (N7245), Longwood, adult 13 May 1947, JRH, (N7739), Enfield, adult 14 June 1947, JRH; **Trimblestown R.** (N6967), larvae June 1989 & April 1990, DAG/JML, det. JML. **TIPPERARY: Breagagh R.** (S1458), larvae 5 September 1991, 10 March & 6 July 1992, DAG/JML, det. JML; **Brownstown R.** (S1665), larvae 5 September 1991 & 10 March 1992, DAG/JML, det. JML; **Kilmastulla R.** (R8172), (R8072), larvae/adults 1976-1977, MAOC; **R. Black** (S1957), larvae 5 September 1991 & 10 March 1992, DAG/JML, det. JML; **R. Clover** (S1959), larvae 5 September 1991, 10 March & 6 July 1992, DAG/JML, det. JML; **R. Drish** (S2163), larvae 5 September 1991, 10 March & 6 July 1992, (S2063), 19 September 1991, 10 March & 6 July 1992, (S1961), larvae 19 September 1991, all DAG/JML, det. JML; **R. Suir** (S1362), larvae 19 September 1991, DAG/JML, det. JML. **WESTMEATH: Belvidere House** (N4247), small river, ♂ 31 May 1991, JPOC; **R. Deel** (N5565), larvae September 1989, (N6949), larvae September 1989, DAG/JML, det. JML. **WEXFORD: stream** (S7806), Pollfur Bridge near Fethard, ♂ pupa 30 June 2014, MAOC/JPOC, det. JPOC. **WICKLOW: R. Ow** (T0981), ♂ pupa 28 July 1973, JPOC.

74. *Silo pallipes* (Fabricius, 1781)

Silo pallipes is widely distributed in Ireland. The cased larvae occur in rivers and streams. Like *Goera pilosa*, the case has ballast stones and the larvae scrape off epilithic algae. In the Glenfinnish River, County Cork, five larval instars were identified but there was a considerable overlap of generations. Some individuals probably took nearly two years to complete their development (Sangpradub, Giller and O'Connor, 1999). The species is widespread in much of Europe.

Flight period: May–September (27 May–3 September).
Counties and 10km squares: Antrim, Armagh, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Kerry, Kildare, Kilkenny, Laois, Mayo, Monaghan, Sligo, Tipperary, Tyrone, Waterford, Wexford, Wicklow (22/32). The species is known from 124 10km squares (124/1019).

FIGURES 183-184. Known Irish and European distributions of *Silo pallipes*.



McLachlan, 1885 (**ANTRIM:** Colin Glen (J2771)). *King, 1888a* (**ANTRIM:** Belfast, Colin Glen (J2771). **KERRY:** Denough [Deenagh] (V9792) and Flesk (V9689) Rivers; Devil's Punch-Bowl (V9781); Mangerton (V9780); Muckross (V9786); Torc Cascade (V9684). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *King and Halbert, 1910* (**ANTRIM:** Colin Glen (J2771). **ARMAGH:** near Armagh (H8745). **CORK:** Glandore (W2235). **DONEGAL:** Ardara (G7390); Lennan Bridge (C1621) [Leannan R.]; Loughs Salt (C1226) and Reelan (C1327). **DUBLIN:** Templeogue (R. Dodder) (O1328). **KERRY:** Deenagh (V9792) and Flesk (V9689) Rivers; Devil's Punch-bowl (V9781); Kenmare (V9471); Loo Bridge (W0881) [on the upper R. Flesk]; Muckross (V9786); Torc (V9684). **WATERFORD:** Dromana (X0994) and Glenshelane (S1203). **WEXFORD:** Edenvale (T0427) [R. Sow]. **WICKLOW:** Enniskerry (O2217) [Glencullen R.]; Fassoroe [Fassaroe] (O2317)). *Frost, 1942* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Beirne and Harris, 1946* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Toner and O'Connell, 1971* (**CORK:** Blarney (R. Martin) (W6176); Fermoy (Blackwater R.) (W8098); Mallow (Blackwater R.) (W5598); Mitchelstown (R. Funcheon) (R8113); Rathduff (R. Martin) (W5984)). **KERRY:** Rathmore (Blackwater R.) (W1693)). *McCarthy, 1972* (**DONEGAL:** Glen R. (Owenea R.) (G8893)). *Fahy, 1972a* (**ANTRIM:** (D0901) [corrected to Braid R. from D0902]. **MAYO:** (F9505)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1819) [An * in this paper indicates adults taken and determined by JPOC]). *Botosaneanu and Malicky, 1978*

(**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480), (V7182)). *O'Connor and Good, 1984* (**SLIGO:** Ben Bulben, stream (G7346)). *O'Connor and Wise, 1984* (**KERRY:** Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Giller, Sangpradub and Twomey, 1991* (**CORK:** R. Araglin, Glenfinish Bridge (R8702)); *Tierney, Kelly-Quinn and Bracken, 1998* (**WICKLOW:** no sites given for the species). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Wright et al., 2000* (**NORTHERN IRELAND:** 9 out of 70 sampled sites). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706) and near Murroogh (M1508)). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 114 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Ryder et al., 2011* (**MAYO:** Burrishoole (F9509)). *Anon., 2011* (**WEXFORD:** Ballyvalloge Stream (S9823); Ballyvoleen R. (S9625)). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *Gammell, 2011* (**WEXFORD:** Crory Lower Stream, Edenvale (T0327); R. Sow, Edenvale (T0427)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); R. Behy (V6589); R. Flesk (V9789); R. Galey (R0139); R. Inny (V5572)). *O'Driscoll et al., 2013* (**MAYO:** Glennamong (F9303), (F9403)). *O'Connor and Hancock, 2014* (**DOWN:** Marshes (J3631)). *O'Driscoll et al., 2014* (**MAYO:** Glennamong R. (F9303); Srahrevagh R. (G0004)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Coopers Water (J2175); Doagh R. tributary (J2593); Douglas Burn (J2299); R. Bush (D0729); R. Clady (Clady Water) (J1984); R. Glenshesk (D1240); Ross Burn (J1597); Six Mile Water (J3195). **DERRY (LONDONDERRY):** Miltown Burn (H8499); R. Agivey (C7912); R. Douglas (H7796); R. Inver (C5301). **DOWN:** R. Annalong (J3719). **FERMANAGH:** Cooneen Water (H4539); Foxhill Burn (H2752); Lisblake Burn (H1637); Lisnabane Burn (H3744); R. Ballinamallard (H2853); R. Black (H0143); R. Garvary (H0063); R. Lack (H2566). **TYRONE:** Black Water (H2974); Dunnyboe Burn (H4599); Fury R. (H5551); Glashagh Burn (H6180); Granagh Burn (H6072); Lissan Water (H8081); Oughtmame Burn (H6293); R. Cleen (H4748); R. Cloghfin (H5767); R. Coolaghty (H2567); R. Owenkillew (H6885); R. Owenreagh (H3365); Tullynadall Burn (H4490)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Anon., 2015a* (**CORK:** Glengarriff Nature Reserve (V9157). **KERRY:** Killarney National Park (V9590)). *Woodward et al., 2015* (**CORK:** Glenfinish R. (R8702)).

Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), adults 1885, CGB, det. RMCL (BMNH). **CAVAN:**

Corrakane L. (H4000), small lake, LT ♂ 4-5 August 1973, JPOC; **R. Annalee** (H6806), above L. Sillan, larva 1 August 1973, JPOC; **R. Owenmore** (H0626), ♀ 3 August 1973, JPOC; **stream** (N6193), 2 larvae & ♀ pupa 2 August 1973, JPOC; **stream/waterfall** (H0127), 3 larvae 3 August 1973, JPOC. **CLARE: Ardcloony R.** (R6770), larva & ♂ 3 September 1973, JPOC; **R. Bleach** (R5795), ♂ 13 July 1973, JPOC; **R. Caher** (M1608), Burren, larva & 4♂♂♀ 19 July & 2♂♂♀ 31 July 1981, JPOC; **R. Cloon** (R1656), 2♂♂ 29 August 1973 (NMI), (R1759), 2♂♂♀ 8 July 1973, JPOC; **R. Denlagh** (R1191), ♂3♀♀ 30 August 1973, JPOC; **R. Doonbeg** [Greygrove R.] (R1261), 3♂♂5♀♀ 9 July 1973, JPOC; **R. Gournar** (R5166), 2 larvae, ♂5♀♀ pupae & ♂ 12 July 1973, JPOC; **R. Inagh** (R1188), adults May-September, MK; **R. Mountrice** (R5866), ♂ pupa 2 September 1973, JPOC; **Spanish Point** (R0477), brook near Milltown [Malbay], ♂ 9 August 1981, HM, det. H. Malicky; **stream** (R5567), east of Sixmilebridge, ♀ 6 August 1986, CM/OSF (SINMNH); **stream** (R0871), ♂ 9 July 1973, JPOC. **CORK: Glengarriff Woods** (V9057), ♂ 6 July 1985, JPOC/MAOC, det. JPOC; **R. Araglin Catchment** (R8702), larvae, NS & PSG; **R. Lee** (W5671), adults May-September, MK; **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI). **DONEGAL: Ardara** (G7390) [Owntocker R.], 2♂♂♀ 3 August 1892, WFJ, conf. JPOC (NMI). **DOWN: Newcastle** (J3631), marshes, ♀ 23 July 1912, JJFXK, det. JPOC (HMAG); **Tollymore National Park** (J3532), stream, ♂♀ 22 June 2014, JPOC (NMI), (J3432), stream, ♂ 22 June 2014, JPOC. **DUBLIN: Bohernabreena** (O0921), reservoir, 2♀♀ 11 June 2015, JPOC/MAOC, det. JPOC; **Dublin** [R. Dodder (O1328)], ♂♀ (♀ misidentified as *S. nigricornis*, det. JPOC) 9 June 1895, conf. JPOC (NMI); **R. Liffey** (O0335), Lucan, adults 12 June 1945, 28 June 1947, JRH. **KERRY: Derriana L.** (V6274), stream, 2♀♀ 1-13 July 1979, JPOC (NMI); **Kenmare** (V9471), ♀♀ 31 May-1 June 1962, JDB, det. PHW (BMNH); **Killarney**, adults 18a July 1887, [JJFXK] (BMNH), ♂♂ 1 July & 18a July 1887, JJFXK (NMS), ♂♀ 25 June & ♂ 27 June, ♂ 8 July & ♀ 29 July 1887, JJFXK, conf. JPOC (NMI), adult July 1940, BPB, det. JRH; **L. Anscaul** (Q5805), ♂ 20 July 1978, JMCH, det. JPOC (NMI); **R. Cummeragh** (V5872), ♂2♀♀ pupae 6 July & 6♂♂7♀♀ 26 August 1973, JPOC; **R. Curraheen** (Q7811), LT ♂♂♀♀ 7-8 July 1973, JPOC (NMI); **R. Gaddagh** (V8391), ♂ pupa 24 August 1973, JPOC (NMI); **R. Glenhoo** (Q5410), 5♂♂5♀♀ pupae & 4♂♂ 7 July 1973, JPOC; **stream** (Q9025), Kilflynn, 3 larvae, ♀ pupa & 2♀♀ 7 August 1973, JPOC; **stream** (R. Dereen, Ring of Kerry) (V4872), 2♂♂3♀♀ 26 August 1973, JPOC. **KILDARE: R. Barrow** (N6112), near Monasterevan [Monasterevin], larva 9 September 1971, AFF, det. JPOC. **KILKENNY: Tullahought** (S4230) [R. Linguan], ♀ 17 June 1985, KGMB, conf. JPOC. **LAOIS: R. Barrow** (N6301), larva 9 September 1971, AFF, det. JPOC. **MAYO: brook near Pontoon** (G2105), 2♂♂ 18 August 1981, HM, det. H. Malicky; **Clare Island** (L6985), adults July 1910, CJM, det. JRAG (IM) (per IDW); **Croagh Patrick** (L8981), Carrowmacloughlin, MVLT ♂♀♀ 3 August 1989, KGMB, det. JPOC. **MONAGHAN: Emyvale** (H6843), ♀ 20-30 July [1885-6], conf. JPOC,

Morton Coll. (NMS). **SLIGO: Clogh Valley** (G7346), ♀ 30 July 1983, JAG, det. JPOC (NMI). **TIPPERARY: Glenpaudeen** (R9150) [near R. Muiteen], ♂♀ 14 June 1985, KGMB; **Kilmastulla R.** (R8071), (R7269), larvae/adults 1976-1977, MAOC. **TYRONE: Ballinderry R.** (H7579), Wellbrook Beeting Mill, larva 20 September 2014, JPOC/MAOC, det. JPOC. **WATERFORD: Cappoquin** (X0999), ♂ 21 July 1902, JJFXK, conf. JPOC (NMI); **Glasha R.** (S3022), ♂ 27 May 1997, JPOC; **Killahaly Wood** (X0895), Blackwater Valley, ♂ 18 July 1986, KGMB, det. JPOC (NMI). **WEXFORD: Corock R.** (S8921), ♀ 20 July 2015, JPOC/MAOC, det. JPOC; **Fethard** (S7806), river near, ♂ 17 June 1990, JPOC; **J. F. Kennedy Park** (S7218), streams, 2♂♂2♀♀ 14 July 1987, JPOC; **Killoughrim Forest** (S9041), stream, ♂ 4 June 1987, JPOC, ♀ pupa 3 July 2014, JPOC/MAOC, det. JPOC; **Oaklands Wood** (S7125), ♂ 7 June 1983, ♂♂ 12 June 1990, JPOC (NMI), 4 larvae & ♀ pupa 29 June 2014, JPOC/MAOC, det. JPOC; **R. Blackwater** (T1234), Blackwater, ♀ 27 July 2015, JPOC; **R. Slaney** (S9738), Enniscorthy, ♂ 27 July 2015, JPOC/MAOC, det. JPOC (NMI). **WICKLOW: Browns Beck Brook** (Carrigower R.) (S9194), ♂6♀♀ 23 July 1973, JPOC; **Fassaroe** (O2317), ♀ 27 June 1909, JNH, det KJM, conf. JPOC (NMI); **King's R.** (O0401), LT ♂♂♀ 22-23 July 1973, JPOC; **Little Bray R.** (O2518), Little Bray, 2♂♂ 31 July 1986, CM/OSF (SINMNH); **L. Dan** (O1502), LT ♂ 21-22 June 1973, stream below, larva & ♂ 1 August 1972, 4♂♂ 21 July & ♂ 19 August 1973, JPOC; **Powerscourt Waterfalls** (O1912), ♂ 31 July 1986, CM/OSF (SINMNH); **R. Avoca** (T1982), ♂ pupa 21 July 1973, JPOC; **R. Avonbeg** (T0396), Glenmalure, 29 July 1946, JRH; **R. Bray** (O2518), ♀ 14 August 1972, ♂ 20 July 1973, JPOC; **R. Brittas** (O0218) 2♂♂♀ 6 June & ♀ pupa, 2♂♂ 18 August 1973, JPOC; **R. Delgany** (O2610), ♂ pupa 20 July 1973, JPOC; **R. Derriana** [Derneen] (S9987), ♀ pupa 23 July 1973, JPOC; **R. Glencree** (O2014), ♂ 19 August 1973, JPOC; **R. Ow** (T0981), 2♂♂ pupae & ♂♀ 28 July 1973, JPOC; **R. Slaney** (S8892), LT 2♂♂♀ 24-25 July 1973, JPOC; **stream** (S8695), 2 larvae 20 September 1973, JPOC; **stream** (O1114), near Kippure, ♂♂♀♀ 6 June 1973, JPOC (NMI); **stream** (N9911), near Lacken, 5♂♂♀ 31 August 1986, JPOC; **stream** (O0110), Lacken Church, 5♂♂ 6 June 1973, JPOC; **streams** (O0110), near Lackan, 2♂♂ 31 July 1986, CM/OSF (SINMNH); **stream/waterfall** (O0208), Kilmore, ♂♂ 6 June 1973, JPOC (NMI); **stream/waterfall** (O0114), Blessington, 6♂♂2♀♀ 6 June 1973, JPOC; **stream/waterfall** (N9911), near Lacken, ♀ 22 July 1973, JPOC; **Vartry R.** (O2208), 2♂♂♀ 4 August & ♀ 24 August 1972, JPOC.

LEPIDOSTOMATIDAE

75. *Crunoecia irrorata* (Curtis, 1834)

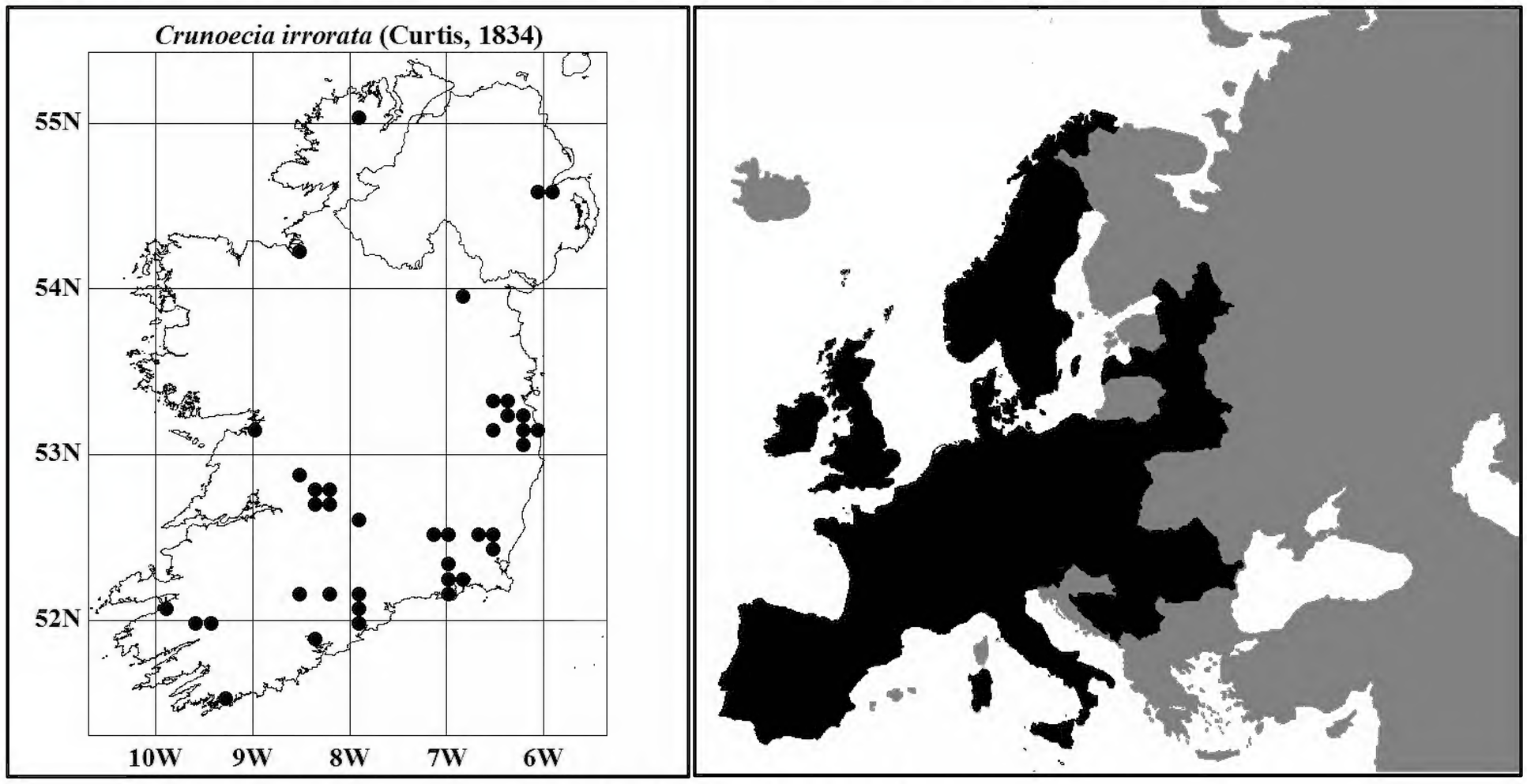
Crunoecia irrorata is widely distributed in Ireland but under-recorded as its habitat is often overlooked. The cased larvae live in permanent trickles/seepages, tufa springs and streams where their food consists mainly of leaves and rotten wood. The mature larvae usually have cases composed of plant material arranged in a square shape. A

similar case can be made by *Lepidostoma hirtum*. Malicky (2005) gives two subspecies but only ssp. *irrorata* occurs in Ireland. The species is widespread in Europe.

Flight period: May–September (27 May–13 September).

Counties and 10km squares: Antrim, Carlow, Cavan, Clare, Cork, Donegal, Dublin, Galway, Kerry, Kildare, Kilkenny, Sligo, Tipperary, Waterford, Wexford, Wicklow (16/32). The species is known from thirty-nine 10 km squares (39/1019).

FIGURES 185-186. Known Irish and European distributions of *Crunoecia irrorata*.



Published records

McLachlan, 1874-1884 (**IRELAND**). *McLachlan, 1885* (**ANTRIM:** Colin Glen (J2771)). *King, 1888a* (**ANTRIM:** Belfast, Colin Glen (J2771). **KERRY:** Dinish (V9385); Torc Cascade (V9684)). *Carpenter, 1902* ([**ANTRIM]:** Colin Glen (J2771)). *McLachlan, 1903* (**KERRY:** Torc Falls (V9684)). *King and Halbert, 1910* (**ANTRIM:** Colin Glen (J2771). **DONEGAL:** Sproule's L. (C1018). **KERRY:** Torc Cascade (V9684). **WATERFORD:** Cappoquin (X0999); Dromana (X0994). **WEXFORD:** Edenvale (T0427) [R. Sow]). *Praeger, 1950* (**ANTRIM**. **DONEGAL**. **KERRY**. **WATERFORD**. **WEXFORD**). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1326), (O1327)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 4 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers [probably washed in]). *Gammell, 2011* (**WEXFORD:** Artramon Stream, Edenvale (T0427)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8168)).

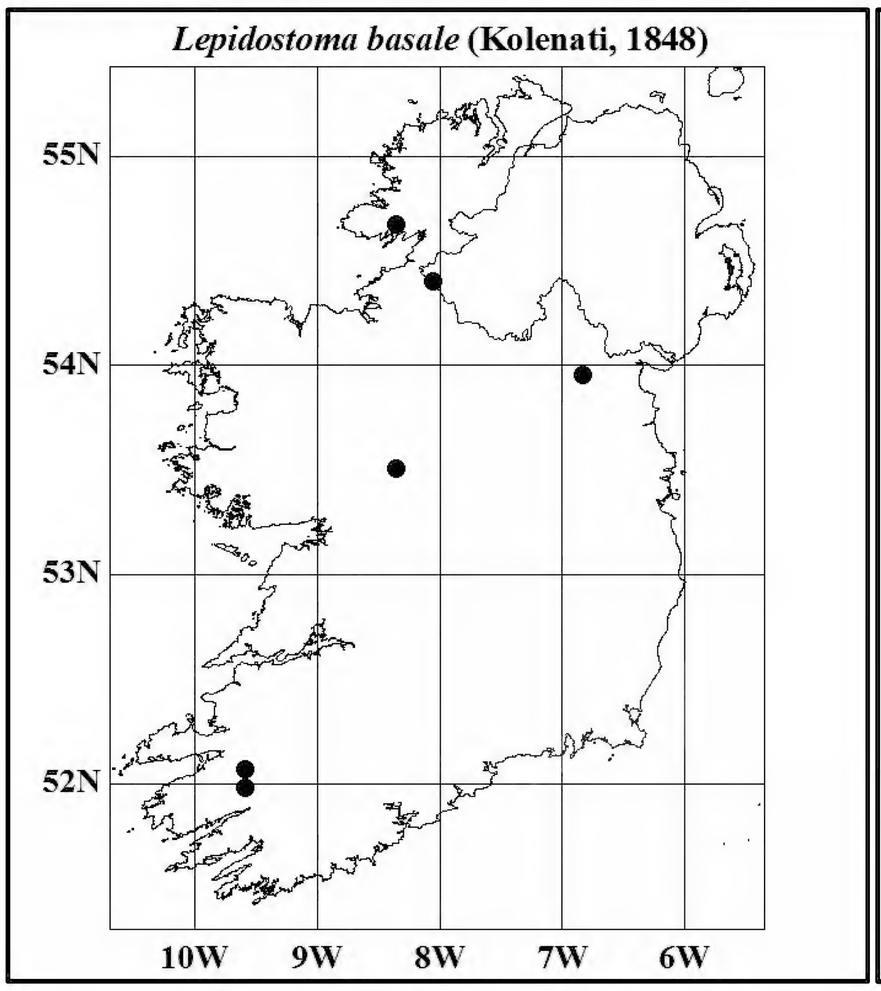
Unpublished records and voucher specimens

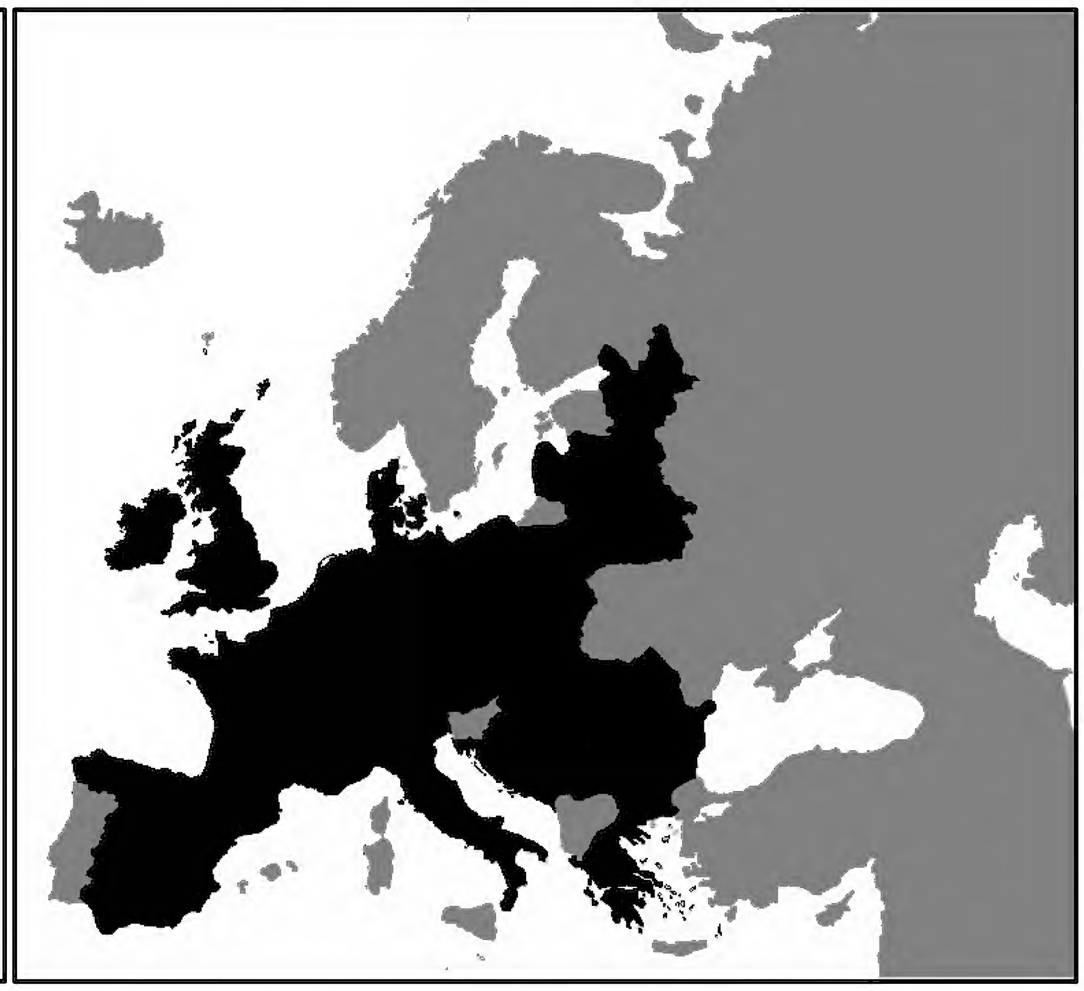
ANTRIM: Belfast (J3473), ♂ 1885, CGB, det. RMCL, conf. JPOC (BMNH). **CARLOW: R. Barrow** (S7239), Bahana Woods, ♀♀ 21 August 1996, JPOC/MAOC. **CAVAN: Dún an Rí** (N7997), stream, ♂♀ 13 June 1996, JPOC (NMI). **CLARE: L. Derg** (R6877), stream entering Tinarana Bay, ♂♀ 17 June 1976, JPOC (NMI). **CORK: L. Hyne** (W0927), wet seepage, ♂ 12 July 1999, PA, det. JPOC; **Rahan** (W6398), marshy area near small river, 2♀♀ 6 July 1989, JPOC; **R. Araglin Catchment** (R8702), larvae, NS & PSG; **Rochestown Glen** (W7169), ♀ 7 August 1981, KGMB, det. JPOC (NMI). **DUBLIN: Bohernabreena** (O0921), stream, larva & ♂2♀♀ 11 June 2015, JPOC/MAOC, det. JPOC. **GALWAY: Cloghballymore** (M3913) [streams], MVLT ♀♀ 14 August 1996, KGMB, det. JPOC. **KERRY: Blue Pool** (V9786), streams, 2♂♂ 30 August 1987, JPOC; **Kenmare Road** (V9484), opposite Muckross Lake, dripping rocks, ♂♀ 31 May 1995, JPOC; **Killarney**, ♀ 1a August 1887, JJFXK (NMS), 3♂♂ 22a July & ♀ 1a August 1887, JJFXK, conf. JPOC (NMI); **L. Caragh** (V7391), stream at, ♀ 5 July 1973, JPOC (NMI); **R. Cloghereen** (V9786), ♂♀ 30 August 1987, JPOC, (V9886), feeding streamlets, larvae June 1974, IDW; **stream** (V9385), at Dinish, 6 larvae 31 May 1995, JPOC; **Torc Falls/stream** (V9684), ♂ 12 June 1902, [JJFXK], conf. JPOC, RMCL Coll. (BMNH), ♂ 29 May 1974, JPOC (NMI). **KILDARE: Louisa Bridge** (N9936), ♂ 2 August 1982, JPOC/MAOC, det. JPOC (NMI), small trickles and stream in marsh, ♂♂♀♀ 22 August 1982, JPOC, tufa spring, larvae 12 March 1984, IDW. **KILKENNY: waterfall** (S6437), near Inistioge, 5♂♂ 21 July 2015, JPOC/MAOC, det. JPOC (NMI). **SLIGO: The Glen** (G6333), 2♂♂2♀♀ 26 August 1992, JPOC. **TIPPERARY: R. Suir** (S1255), larvae 22 May 1992, DAG/JML, det. JML. **WATERFORD: Dunmore East** (S6800), seepages at cliff in harbour, 2♂♂ 11 June 1991, JPOC; **Glendine Bridge** (X0782), ♂ 20 August 1980, KGMB, det. JPOC (NMI). **WEXFORD: Duncannon** (S7308), at light ♂ 9 June 1982, JPOC; **Killoughrim Forest** (S9041), stream, 2♀♀ 27 May 1987, JPOC, LTS ♂ 28 July 2015, JPOC/MAOC, det. JPOC (NMI); **Oaklands Wood** (S7125), small trickles entering stream, larvae June 1982, ♀ 29 May 1987, JPOC; **R. Boro** (S9636), stream entring river at Soldiers Hole, ♂ 23 July 2015, JPOC/MAOC, det. JPOC; **Tintern Abbey** (S7910), small river, ♀ 15 June 1990, JPOC; **Urrin R.** (S9738), ♂ 28 July 2015, JPOC/MAOC, det. JPOC; **Wexford:** [Edenvale (T0427)], ♂ 28 June 1902, JJFXK, conf. JPOC (NMI). **WICKLOW: Devil's Glen** (T2499), ♀ 7 August 1990, JPOC/MAOC, det. JPOC; **Glen of the Downs** (O2611), ♂ 22 August 1988, JPOC, system of spring runnels, lots of beech and oak litter, larvae abundant 11 March 1984, & shallow spring stream, larvae 11 March 1984, IDW; **Knocksink Woods** (O2118), streams, 2 larvae 10 May 1984, JPOC, MT ♂♀ 6-10 July 1995, CR, det. JPOC, (O2117), MT by flush beside woodland, ♀ 26-30 June 1995, ♂ 30 June-3 July, 2♂♂♀ 3-6 July 1995, CR, det. JPOC; **Owendoher R.** (O1326), larva July 1977, M. Kelly (now M. Kelly-Quinn) (NMI); **Powerscourt** (O2116), ♂♀ 13 September 1929, AWS,

det. JPOC (NMI), tufa spring, larvae 18 March 1984, JPOC; **Russellstown Park** (N9611), small trickle entering stream in woods, adult, larvae 1982, JPOC, stream feeding lake, middle section parallel to road, larvae in tufa-depositing side trickle, 10 March 1984, IDW.

76. *Lepidostoma basale* (Kolenati, 1848)

FIGURES 187-188. Known Irish and European distributions of *Lepidostoma basale*.





Lepidostoma basale is a local species in Ireland. The cased larvae live in rivers and streams. *L. basale* is one of the best-studied European trichopteran species (Waringer and Graf, 2011). The main food sources are fungi and bacteria that are ingested together with leaf fragments or wood particles. Like *Potamophylax*, mature larvae gather together and pupate in aggregations on suitable habitats. Male swarming behaviour is linked with the riparian vegetation, predominantly alder. The species is widespread in much of Europe.

Flight period: May–June (28 May–6 June). There are only a small number of Irish adult records. Barnard and Ross (2012) give the British flight period as May–September.

Counties and 10km squares: Cavan, Donegal, Fermanagh, Galway, Kerry (5/32). The species is known from six 10km squares (6/1019).

Published records

O'Connor, 1978a as *Lasiocephala basalis* (**KERRY**). *O'Connor, 1987* as *Lasiocephala basalis* (**KERRY**). *Wallace, Wallace and Philipson, 1990* as *Lasiocephala basalis* (**IRELAND:** widespread but local). *Ashe, O'Connor and Murray, 1998* as *Lasiocephala basalis* (**IRELAND**). *Wright et al., 2000* as *Lasiocephala basalis* (**NORTHERN IRELAND:** 1 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* as *Lasiocephala basalis* (**IRELAND:** widespread but local). *O'Connor and Wise, 2004* as *Lasiocephala basalis* (**KERRY:** R. Flesk).

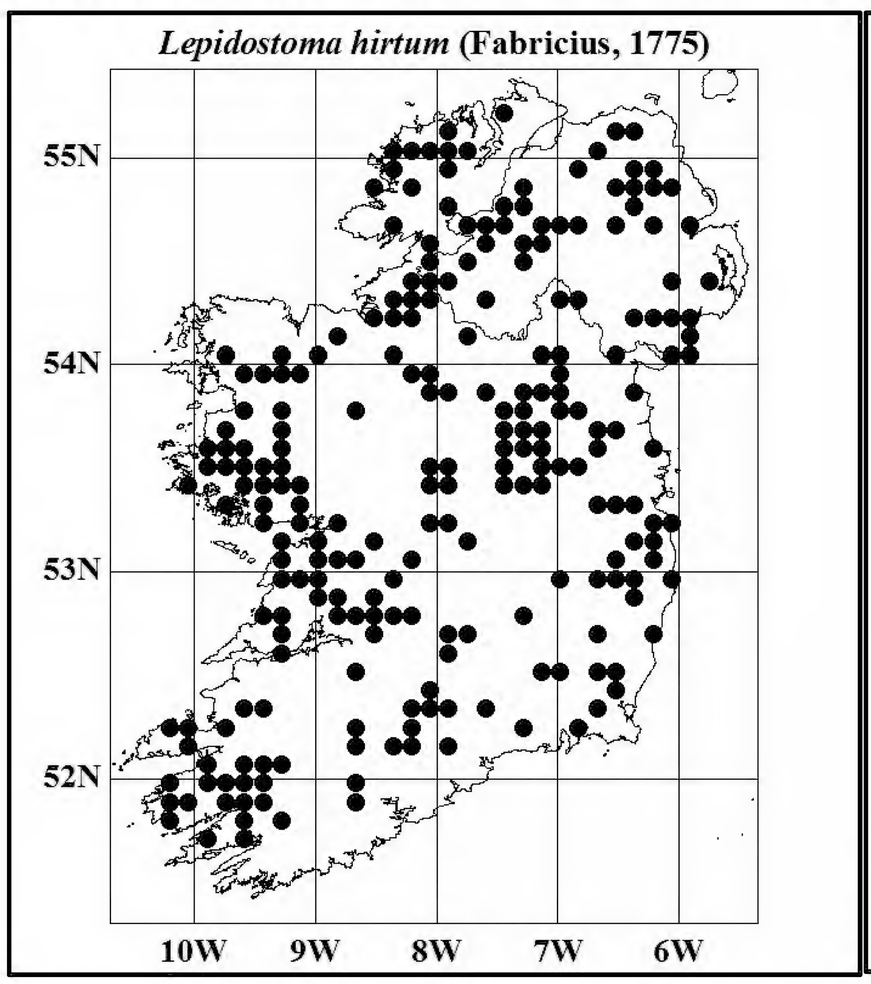
Bradley and Kelly-Quinn, 2005 as *Lasiocephala basalis* (**IRELAND:** 15 out of 207 river sites). *Kelly-Quinn et al., 2005* as *Lasiocephala basalis* (**IRELAND:** rivers). *Donohue et al., 2009* as *Lasiocephala basalis* (**IRELAND**). *O'Connor and Nelson, 2012* (**KERRY**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* as *Lasiocephala basalis* (**DONEGAL:** Namanfin [lake top of Corker R. near Ardara] (G7983)). *O'Connor and Davy-Bowker, 2014* (**FERMANAGH:** R. Roogagh (Glen R.) (G9451)).

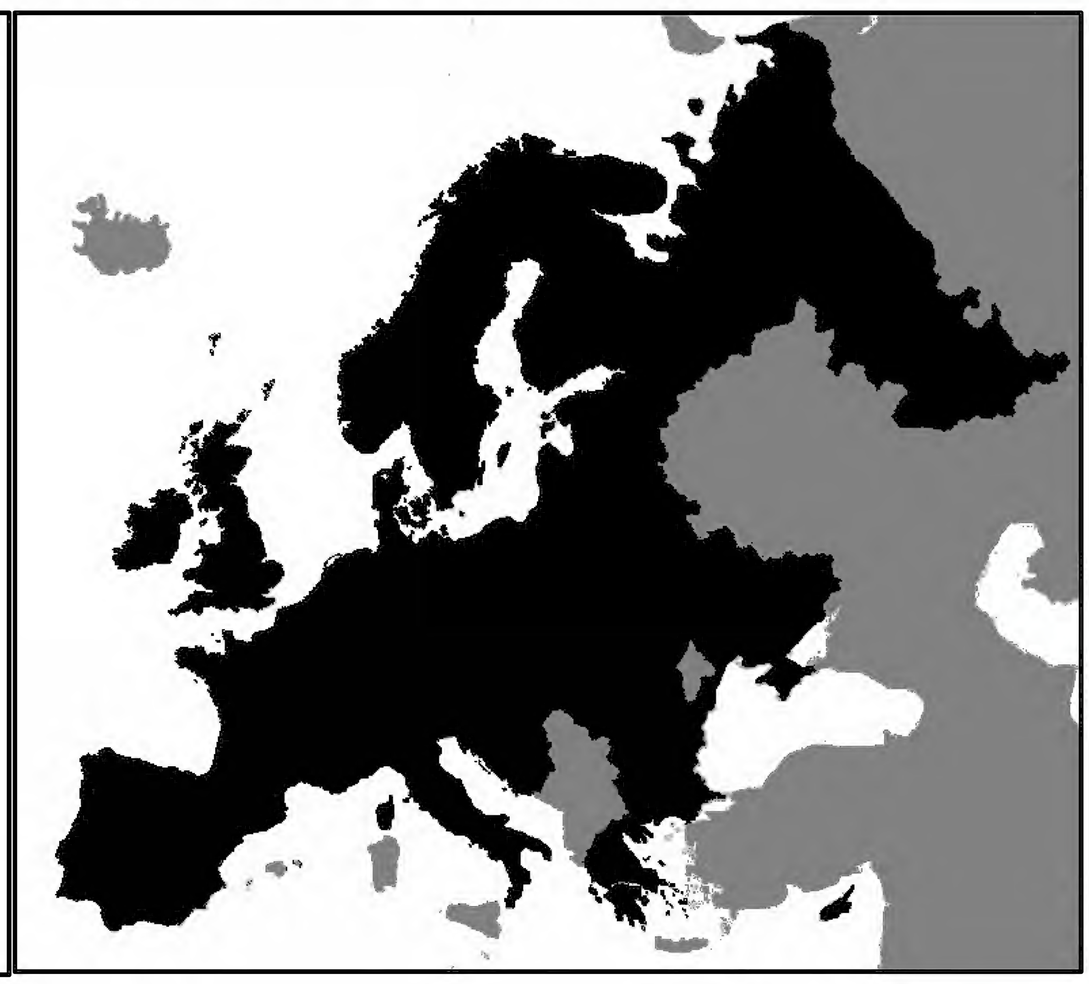
Unpublished records and voucher specimens

CAVAN: Dun an Rí Forest Park (N7997), streams, ♂♂ 6 June 1996, JPOC (NMI). **GALWAY: Killian R.** (M7449), Carrowmore, road bridge u/s confluence with Shiven R., larva 12 May 2012, MG. **KERRY: R. Flesk** (V9689), ♀ 28 May 1974, JPOC; **Torc Cascade** (V9684), 3♂♂♀ 28 May 1974, JPOC (NMI). **NO COUNTY: Little Brosna**, adult, May, MK.

77. *Lepidostoma hirtum* (Fabricius, 1775)

FIGURES 189-190. Known Irish and European distributions of *Lepidostoma hirtum*.





One of Ireland's commonest caddisflies, *Lepidostoma hirtum* is widespread on the island. *Lepidostoma fimbriatum* (Pictet, 1865) was recorded by Mosely (1930) from Inverin, County Galway. However, this was a misidentification of a variety of *L. hirtum* in which the more conspicuous scales of the anterior wing of the male are confined to the nervures but there are also white or nearly colourless scales on other parts of the wing. The cased larvae occur in large streams, rivers and lakes. They can be present in huge numbers. Their food mainly includes leaves which they shred (Azevedo-Pereira, Graça and González, 2006). In mature larvae, all or part of the case is composed of plant material arranged in a square shape. Malicky (2005) gives two subspecies but only ssp. *hirtum* occurs in Ireland. The species is widespread in Europe.

Flight period: May–October (18 May–2 October).

Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Leitrim, Limerick, Longford, Louth, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (31/32). The species is known from 233 10km squares (233/1019).

Published records

McLachlan, 1885 (**ANTRIM:** Cave Hill (J3279)). *King, 1888a* (**ANTRIM:** Cave Hill (Belfast) (J3279). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Ma'ammee [Mumwee] Laogh (L9748). **KERRY:** Cloghereen (V9787); Denough [Deenagh] R. (V9792); Dinish (V9385); Ross Castle (V9488); The Glen in Deer Park (V9792). **MAYO:** Carrowbeg R. (M0084). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **SLIGO:** near Sligo (G7035); Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan (N0446) [L. Ree]; Shannon (N0341); Waterston [Waterstown] (N1045); Wineport (N0746) [L. Ree]). *King and Halbert, 1910* (**ANTRIM:** Cave Hill near Belfast (J3279); L. Neagh, Shane's Castle (J1187). **DONEGAL:** Cottian (C1318) [Leannan R.]; Dunleury L. [Dunlewey] (B9119); Gweedore (B8221); Lennan Bridge (C1621) [Leannan R.]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Maumwee [Manwee] L. (L9748). **KERRY:** Cloghereen (V9787); Deenagh R. (V9792); Dinish (V9385); Ross Castle (V9488), etc. **MAYO:** Carrowbeg R. (M0084). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]; Yew Point (N0146) [L. Ree]. **SLIGO:** near Sligo (G7035). **WATERFORD:** Cappoquin (X0999); Lismore (X0498); Salterbridge (S0800). **WESTMEATH:** Coosan (N0446) [L. Ree]; Shannon (N0341); Waterstown (N0946); Wineport (N0746) [L. Ree]). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Galway (M2926); Inverin (M0822); Oughterard (M1343). **MAYO:** L. Conn (G1516)). *Mosely, 1930* as *Lepidostoma fimbriatum* (**GALWAY:** Inverin (M0822)). *Beirne, 1939* (**CORK:** Ballyhooly (W7298) [R. Blackwater]. **WEXFORD:** Tara Hill (T2062). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Mosely, 1939* as *L. fimbriatum* (**MAYO:** L. Conn (G1516) ("pehaps doubtfully, recorded")). *Frost, 1939* (**KILDARE:** Straffan (N9229) [R. Liffey]. **WICKLOW:** Ballysmuttan (O0514) [R. Liffey]). *Frost and Went, 1940* (**KILDARE:** Straffan (N9229)). *Frost, 1942* (**KILDARE:** Straffan (N9229) [R. Liffey]. **WICKLOW:** Ballysmuttan [R. Liffey] (O0514)). *Hickin, 1967* (**MAYO:** L. Conn (G1516)). *Toner and O'Connell, 1971* (**CORK:** Fermoy (Blackwater R.) (W8098); Mallow (Blackwater R.) (W5598); Mitchelstown (R. Funcheon) (R8113). **KERRY:** Rathmore (Blackwater R.) (W1693)). *Partridge and Foy, 1972* (**MAYO:** L. Feeagh (F9600), (F9601), (F9700), (L9699), (L9799)). *Fahy, 1972a* (**LOUTH:** (O0695). **TIPPERARY:** (R9930), (S2423)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Fahy, 1972c* (**MAYO:** Altahoney R. (F9605)). *Moriarty, 1972a* (**[GALWAY]:** L. Corrib, south [M2434]). *Moriarty, 1973a*

(**CLARE:** L. Derg (R6070) = [R6978]. **GALWAY:** L. Corrib (M1040) = [M1249], (M2030) = [M2434]. **MAYO:** L. Conn (G1010) = [G1511]. **SLIGO:** L. Gill (G7030) = [G7232]). *Moriarty, 1973b* (**MAYO:** L. Conn (G1511). **SLIGO:** L. Gill (G7232)). *Moriarty, 1974* (**CLARE:** L. Derg (R6978)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *O'Connor and Norton, 1977* (**WESTMEATH:** Hare Island, L. Ree (N0446)). *Speight, 1977* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan (N0446)]). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7007), (H6907), (H7106). **WICKLOW:** L. Dan (O1504), (O1502)). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488)). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480), (V7281), (V7186), (V7192)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9191), (V9290), (V9490), (V9785), (V9686); Muckross Lake (V9385), (V9585), (V9685); Upper Lake [Killarney]). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1327)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 35 out of 70 sampled sites). *Thompson, Cotton and Ryan, 2002* (**SLIGO:** L. Gill). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706) and near Murroogh (M1508)). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune (V8991), the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 118 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1871), (M1777)). *Anon., 2008* (**DUBLIN:** Delvin R. (O1565)). *Donohue et al., 2009* (**IRELAND**). *Atalah et al., 2010* (**IRELAND**). *Anon., 2011* (**WEXFORD:** R. Slaney (S9830)). *Gammell, 2011* (**WEXFORD:** R. Sow, Edenvale (T0427)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**GALWAY:** lowland lakes (M0229), (M0927)). *Little and Free, 2013* (**CLARE:** Doolough (R1172). **CORK:** Glenbeg L. (V7053). **DONEGAL:** Dunglow L. (B7811); Gartan L. (C0515); Glen L. (C1029); Kiltooris Lake (G6797); Namanfin [lake top of Corker R. near Ardara] (G7983); L. Anure (B8216); L. Fern (C1823); L. Finn (B9101); L. Golagh (G9666); L. Mourne (H0790); L. Nacung (B8920); L. Naminn (C3941); L. Veagh [Beagh] (C0121); L. Waskel (B7316). **GALWAY:** Cloongat [Cloonagat] L. (L6847); Derryclare (L8248); Doo L. (L8368); Glencullin [Glenullin] L. (L8169); Kylemore L. (L7755); L. Anaserd (L6044); L. Ardderry (L9945); L. Bofin (M0344); L. Fee (L7961); L. Maumwee [Manwee] (L9748); L. Maumeen [the grid reference of L6141 appears to be in the sea and not included]; L. Nafooey (L9759); L. Rea (M6215); L. Skannive (L8032); Nahalseam [L. Aphreaghaun] (L9744); Nambrackkeagh [lake] (L8260); Oorid L.

(L9346). **KERRY:** Cloon L. (V7077) (V7078); Cloonaghlin L. (V6070); L. Caragh (V7190); L. Guitane (W0384); L. Nakirka (V7389); Muckross Lake (V9584). **LEITRIM:** Glenade L. (G8246); Glencar L. (G7543); L. Melvin (G9054). **MAYO:** Beltra L. (M0798); Doo L. (L8368); Glencullin [Glenullin] L. (L8169); Levally L. (G1404); L. Conn (G1810); L. Feeagh (F9600). **ROSCOMMON:** Cavetown L. (M8397); Errit L. (M5485); L. Drumharlow (G9001). **SLIGO:** Easky L. (G4422); L. Talt (G3915)). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Flesk (V9789); R. Inny (V5572)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Cashel Burn (D1706); Douglas Burn (J2299); Dunnstown Burn (D0409); Kellswater (J1698); Legnagooly Burn (D1312); R. Blackwater (H7544); R. Braid (D1003); R. Bush (D0729), (C9436); R. Clady (C9603); R. Clogh (D0613); R. Dervock (D0233); R. Main (J0889). **ARMAGH:** Forkhill R. (J0115). **DERRY (LONDONDERRY):** Cam Burn (C8421); R. Aghadowey (C8722); R. Agivey (C7912); R. Ballinderry (H9279), (H7379). **DOWN:** Begny Hill Feeder (J2850); Cassy Water (J2314); Newry R. (J0730); R. Annacloy (J4448); R. Annalong (J3719); R. Kinnahalla (J2328); R. Lagan (J2551); R. Mullagh (J3316); R. Shimna (J3532); Spences R. (J3722); Upper Bann (J2129). **FERMANAGH:** R. Black (H0143); R. Garvary (H0063); R. Roogagh (Glen R.) (G9451); R. Sillees (H1152), (H2341). **TYRONE:** Ballynahatty Water (R. Owenreagh) (H4367); Black Water (H2974); Dunnyboe Burn (H4599); Eskragh Water (Quiggery Water) (H4763); Fairywater (H3976); Glashagh Burn (H6180); Granagh Burn (H6072); R. Camowen (H4673); R. Cloghfin (H5170); R. Derg (H1980), (H3184); R. Owenkillew (H6885); R. Owenreagh (H5882); R. Strule (H4186); Quiggery Water (H4467); Tullynadall Burn (H4490)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Mulkear (R8667), (R8467), (R8168); R. Tar (R9117), (R9416), (R9617)). *Baars et al., 2014* (**IRELAND:** recorded in 1 of 12 upland peatland lakes). *Anon., 2015a* (**CLARE:** Dromore Nature Reserve (R3586); L. Bunny (R3896). **DUBLIN:** Liffey Valley Park, Waterstown (O0835). **GALWAY:** L. Corrib (M2926). **KERRY:** Killarney National Park (V9590). **MAYO:** Ballycroy National Park (F8314). **ROSCOMMON:** L. Key Forest Park (G8404)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Lower L. Erne (H1758)).

Unpublished and voucher specimens

ANTRIM: L. Neagh (J1187), Shane's Castle, ♀, [JNH] (NMI). **CARLOW: Bahana Woods** (S7239), ♀ 14 June 1991, JPOC/MAOC, det. JPOC; **R. Barrow** (S7237), St Mullins, LTS 22♀♀ 22 July 2015, JPOC/MAOC, det. JPOC, ♂ 30 July 2015, JPOC, (S7238), lockhouse, ♂ 22 July 2015, JPOC/MAOC, det. JPOC, (S7043), Tinnahinch, dead inside a light-fitting on a bridge, ♀ 21 August 1996, JPOC; **R. Slaney** (S9161), Clonegal, adult 31 August 1946, JRH; **St Mullins** (S7238), stream, larva 5 July 2014, MAOC/JPOC, det. JPOC. **CAVAN: L. Cuilcagh** (N6389), ♂11♀♀ 2 October 1972, 3 larvae exposed rocky shore & larva sheltered rocky shore, 29 March 1973, JPOC; **L. Mullagh** (N6785), 2 larvae sheltered rocky shore, 3 April 1973, JPOC; **L. Sheelin**,

adult 11 August 1947, JRH, (N4785), Mount Nugent, ♀ 1 August 1986, CM/OSF (SINMNH), (N4183), Kelly's Bay, larva 11 June 1975, KFW, det. JPOC, IETS 1973/1974: (N4685), Crover, adult, (N4586), near Arley Point, 2 adults, PG; **L. Sillan** (H7007), LT 2♂♂♀ 11 August & lamp ♂5♀♀ 30 August 1972, (H7106), 6♂♂6♀♀ 9 August & 2♀♀ 1 September 1972, 60 larvae exposed rocky shore & 3 larvae sheltered rocky shore, 26 March 1973, JPOC; **R. Annalee** (H6810), 5♂♂23♀♀ 1 September 1972, JPOC; **R. Barora** (N6893), LT 3♀♀ 1-2 August 1973, JPOC; **R. Blackwater** (N5992), above L. Ramor, 2♀♀ 2 August 1973, JPOC; **R. Laragh** (H5210), LT 2♂♂13♀♀ 2-3 August 1973, JPOC; **Swanlibar** (H1524), ♀ 3 August 1973, JPOC. **CLARE: Caher R.** (M1608), LT 8♀♀ 30-31 August 1973, JPOC; **Doolough** (R1171), ♀ 9 July 1973, JPOC; **Doonbeg R.** (R1261) [Greygrove R.], larva & ♂2♀♀ 9 July 1973, JPOC; **Knockalough** (R1463), larva 13 July 1973, JPOC; **Lickeen Lake** (R1891), 2 larvae 10 July 1973, JPOC, larvae 1996/1997, JW; **L. Bunny** (R3797), MVLT ♀ 3 August 1996, KGMB, det. JPOC; **L. Derg** (R6877), stream entering Tinarana Bay, ♂ 17 June 1976, JPOC (NMI), (R6878), LT ♂59♀♀ 2-3 September 1973, JPOC, (R7186), near Mount Shannon, adult 6 June 1947, W. E. Frost, det. JRH, (R7186), Mount Shannon, LT ♂ 26-27 August 2003, KGMB, det. JPOC; **L. Inchiquin** (R2789), LT ♀ 31 August-1 September 1973, JPOC, larvae 1996/1997, JW; **Moyree R.** (R3689), 3 larvae 1 July 1973, JPOC; **O'Brien's Big Lake** (R4082), LT ♀ 1-2 September 1973, JPOC; **pond** (R6566), ♂3♀♀ 2 September 1973, JPOC; **Rinnamona L.** (R2892), Burren, adult 1-11 September 1963, JDB (BMNH); **R. Annageeragh** (R0371), 3 larvae 9 July 1973, JPOC; **R. Bleach** (R6096), LT 2♀♀ 3-4 September 1973, JPOC; **R. Caher** (M1608), Burren, larva 19 July 1981, JPOC; **R. Cloon** (R1656), ♀ 29 August 1973, JPOC (NMI); **R. Fergus** (R2592), LT 2♀♀ 10-11 July 1973, (R2689), exiting L. Inchiquin, 7♀♀ 1 August 1999, (R2688), above L. Inchiquin, ♀ 1 September 1973, (R2591), LT 2♀♀ 10-11 July 1973, (R3478), ♂ 2 September 1973 (NMI), (R3480), 8 larvae 11 July 1973, (R3489), larva 11 July 1973, JPOC; **R. Gournar** (R5166), 3 larvae 12 July 1973, JPOC; **R. Owengarry** (R4767), larva 2 September 1973, JPOC; **R. Rinne** (R4174), larva 12 July 1973, JPOC; **R. Shannon** (R7072), Killaloe, ♂ 6 August 1986, CM/OSF (SINMNH); **Teereen L.** (R4671), LT 6♀♀ 11-12 July 1973, JPOC. **CORK: Ballyhooly** (W7298) [R. Blackwater], adults August 1938, BPB (BMNH); **Blackwater R.** (W5397), west of Mallow, 2♂♂ 4 August 1986, CM/OSF (SINMNH); **Buttevant** (R5408) [R. Awbeg], MVLT 3♂♂19♀♀ 17 August 1995, KGMB; **Glengarriff** (V9256), adult July 1947, BPB, det. JRH; **Gouganebarra** (W0966), 2 larvae 27 October, MJC det JPOC; **near Carrigrohane** (W5973) [R. Lee], MVLT ♂♀ 23 July 1985, KGMB, det. JPOC; **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.); **R. Lee** (W5671), adults July-September, MK; **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI); **Rosnagrena** (V8959), Glengarriff, at light adult 18 May 1966, ECPC (per IDW). **DONEGAL: Glenveagh National Park** (C0423), MVLT ♂ 11 August 1984, KGMB, det. JPOC. **DUBLIN: Lucan** (O0335) [R. Liffey], ♀ 29 August 1888,

JJFXK, conf. JPOC (NMI); **R. Liffey** (O1034), millrace, Chapelizod, adult 24 May 1946, JRH, (O0735), Strawberry Beds, 4♂♂2♀♀ 12 August 2014, 4♀♀ 29 August 2015, JPOC, (O0635), weir at Wren's Nest, 4♂♂8♀♀ 12 August 2014, JPOC. **FERMANAGH: Lower L. Erne** (H1658), adult 28 May 1947, Beatty, det. JRH. **GALWAY: Cloghballymore** (M3913) [streams], 2♀♀ 14 August 1996, KGMB; **Connemara National Park** (L7455), Polladirk R., larvae 1991, SV, conf. JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 26 May 1984, PB, det. JPOC; **Garryland** (M4103), MVLT ♂ 10 July 1996, KGMB, det. JPOC; **Inver** (L9139), adult 5 July 1947, JRH; **Inverin** (M0822), adults 17 July-2 August 1926, MEM (BMNH), also adult as *L. fimbriatum*; **L. Ballyquirke** (M2331), larva 1996/1997, JW; **L. Beg** (M2039), Pollagh Bog, LT ♀ 30 August 2014, MG/CC, det. MG; **L. Corrib** (M1745), adults May-September 1964, MK, (M2531), Hurney's Point [near Moycullen], MVLT 3♀♀ 12 August & 15♀♀ 28 August 2003, KGMB, det. JPOC, (M2531), Lower, ♂ 7 August 1980, BC, conf. JPOC (NMI), (M2341), Middle, ♀ 27 July 1980, BC, det. JPOC (NMI), (M2930), Angliham, larva 6 July 1983, DOK, det. JPOC, (M2341), Knockferry, LT 6♀♀ 21 August 2014, MG/CC, det. MG, (M0949), Curraghduff West, Glan Road Picnic Area, LT 30♂♂2♀♀ 12 June 2015, MG/CC, det. MG; **L. Cutra** (R4698), MVLT ♂♀♀ 30 August 1996, KGMB, det. JPOC, (M2741), Cloonmore, LT ♀ 6 August 2014, MG/CC, det MG; **L. Maumwee** [Manwee] (L9748), larvae 1996/1997, JW; **Ma'am** [Maam] (L9653), 3♂♂, JJFXK, conf. JPOC (NMI); **Oughterard** (M1343), adult 3-9 August 1926, MEM (BMNH); **R. Corrib** (M2925), Nun's Island, ♀ 30 August 1978, DMG, det. JPOC (NMI); **R. Shannon** (M8705), u/s of Portumna, grab larva 12 July 1972, AFF, det. JPOC. **KERRY: Blackwater R.** (V7972), Derrendarragh, 15♀♀ 4 August 1986, CM/OSF (SINMNH), (V7970), ♀ 4 July 1973, JPOC; **Caragh R.** (V7184), ♀ 3 July 1973, JPOC; **Crinnagh R.** (V9481), 2♂♂3♀♀ 4 August 1986, CM/OSF (SINMNH); **Cummeragh R.** (V5872), 8 larvae 6 July & 3♂♂6♀♀ 26 August 1973, JPOC; **Derriana L.** (V6073), ♂2♀♀ 6 July 1973, JPOC; **Galway's Bridge** (V9180), ♂2♀♀ 31 May 1995, JPOC; **Gap of Dunloe** (V8787), lakes, ♂ 10 July 1986, JPOC; **Glenahoo R.** (Q5410), larva, ♂ pupa & 2♂♂5♀♀ 7 July 1972, ♂♀ 28 August 1973, JPOC; **Inch** (Q6501) [R. Emlagh], adult 25-31 August 1963, JDB (BMNH); **Killarney**, adult 1940, BPB, det. JRH, adult (NMS); **Killarney Lakes**, trout stomachs, 1007 larvae, UCD, det. JPOC; **L. Caragh** (V7392), ♂♀ 5 July 1973, JPOC; **L. Doon** [L. Slat] (Q6108), larva 17 October 1973, JPOC; **L. Leane** (V9291), Golf Course, larva 29 May 1974, (V9686), 8 larvae exposed rocky shore, 5 larvae reed bed & 2 larvae sheltered rocky shore, 10 April 1973, JPOC; **Muckross Lake** (V9485), LT ♀♀ 27-28 July 1973, JPOC (NMI), 6 larvae exposed rocky shore & 40 larvae sheltered rocky shore, 13 April 1973, JPOC; **R. Ferta** (V5282), ♀ 6 July 1973, JPOC; **R. Flesk** (V9789), 4♂♂3♀♀ 3 July 1973, (W0387), 2♂♂2♀♀ 5 September 1972, JPOC, larva 16 November 1971, EJW, det. IDW, (V9689), ♀ 25 June 1973, JPOC; **R. Laune** (V8991), larvae June 1972, EJW (NMI), (V8892), larva 16 November 1971,

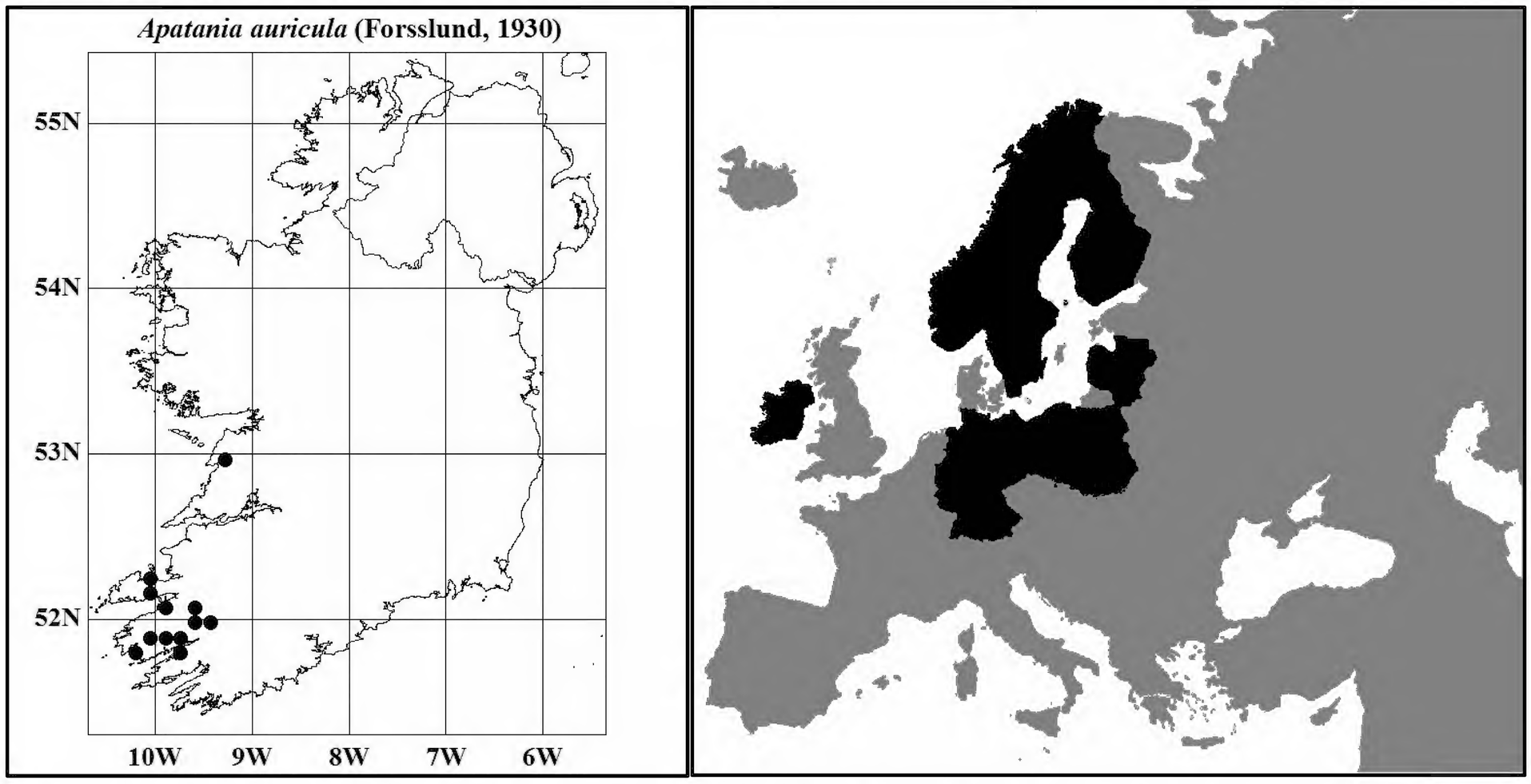
EJW (NMI); **R. Owenschull** (Q5901), 2 larvae 7 July 1973, JPOC; **Roughty R.** (V9873), 2♀♀ 26 August 1973, (V9371), tidal, ♀ 4 July 1973, JPOC; **stream** (V6274), near Derriana L. ♂ 1-13 July 1979, JPOC (NMI); **stream** (Q9025), Kilflynn, ♂ 7 August 1973, JPOC; **stream** (V9173), entering Roughty R., ♂ 4 July 1973, JPOC; **stream** (R. Dereen, Ring of Kerry) (V4872), ♂ 26 August 1973, JPOC; **Torc stream** (V9684), larva 13 April 1973, ♀ 29 May 1974, JPOC; **Upper Lake, Killarney** (V9181), 3 larvae exposed rocky shore, 13 April 1973, JPOC. **KILDARE: R. Barrow** (S6892), near Athy, larva 7 July 2013, PS; **R. Rye** (O0036), Leixlip, adult 31 July 1947, JRH. **KILKENNY: R. Nore** (S4472), larvae 16 August 2004, PS; **Woodstock House** (S6437), Inistioge, ♂ 24 July 1987, JPOC. **LEITRIM: Bonet R.** (G8534), larvae 24 June 1991, (G8446), larvae 25 June 1991, (G8741), larvae 25 June 1991, (G8738), larvae 24 June 1991, DAG/JML, det. JML; **Glencar Waterfall** (G7543), ♀ 25 August 1992, JPOC; **L. Boderg** (N0192), 4 larvae 19 July 1972, AFF, det. JPOC; **L. Bofin** (N0489), 7 larvae 20 July 1972, AFF, det. JPOC; **L. Corry** (M9497), dredge 9 larvae 19 July 1972, AFF, det. JPOC. **LIMERICK: R. Camogue** (R5239), Croom, adult 2 September 1948, JRH; **R. Shannon** (R6663), Castleconnell, LT 2♂♂12♀♀ 12-13 July 1973, JPOC. **LONGFORD: L. Naback** (N2494), adults July-September 1964, MK; **R. Shannon** (N0116), u/s of Banagher, dredge ♂ pupa 12 July 1972, AFF, det. JPOC. **MAYO: L. Carra** (M1673), adults July-September 1964, MK, grab larva April 1974, ♂♀ 21 May 1977, JPOC; **L. Conn** (G1516), adult 16-23 September 1929, MEM (BMNH), (G2306), Foxford, adult 30 August 1948, RS, det. JRH; **L. Feeagh** (F9700), larvae 1996/1997, JW; **L. Mask** (M1259), (M1465), adults July-September, MK; **L. Moher** (L9777), larvae 1996/1997, JW; **Westport** (L9984), ♀, JJFXK, conf. JPOC (NMI). **MEATH: L. Sheelin** (N4482), Goreport Bay, IETS 1973/1974 2 adults, PG; **R. Blackwater** (N7377), west of Kells, ♂♀ 1 August 1986, CM/OSF (SINMNH); **R. Boyne** (N9271), Stackallen, adults 3 August 1945 & 22 May 1946, JRH, (O0373), Donore, adult 1 June 1946, JRH, (N8559), larva 25 June 1971, AFF, det. JPOC, (N6044), larvae June 1989, (N7149), larvae July 1991, (N7352), larvae July 1991, DAG/JML, det. JML. **MONAGHAN: Emyvale** (H6843), adult, [KJM] (NMS). **OFFALY: Little Brosna** (N6050), Birr, ♀ 8 September 1978, JPOC; **R. Brown** [Brosna], near Ferbane (N1124), adult 5 September 1947, JRH; **Silver R.** (N1814), adult 5 September 1947, JRH. **ROSCOMMON: R. Shannon** (N0339), downstream of Athlone, larva 13 July 1972, AFF, det. JPOC. **SLIGO: L. Arrow** (G7711), adults July-September 1964, MK; **L. Easky** (G4422), larvae 1996/1997, JW; **L. Gill** (G7234), larvae 20 July 1989, DAG/JML, det. JML. **TIPPERARY: Cahir** (S0524), Castle, ♀ 9 September 1985, KGMB, conf. JPOC, (R0620), Ballybrado House, ♂ 14 July 1986, KGMB, det. JPOC (NMI); **Kilmastulla R.** (R8072), larvae/adults 1976-1977, MAOC; **R. Black** (S1957), larvae 6 July 1992, DAG/JML, det. JML; **R. Clover** (S1959), larvae 6 July 1992, DAG/JML, det. JML; **R. Drish** (S2063), larvae 6 July 1992, (S1961), 6 July 1992, (S1759), larvae 6 July 1992, DAG/JML, det. JML; **R. Suir** (S1258), larvae 10 March & 22 May 1992, (S1255), 10

March & 22 May 1992, DAG/JML, det. JML. **WATERFORD: Cappoquin** (X0999), ♂ 24 & ♂ 28 July 1902, JJFXK, conf. JPOC (NMI); **Portlaw Estate** (S4415), ♂♂ 16 July 1987, JPOC; **R. Blackwater** (X0498), Lismore, ♀ 20 May 1999, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], adults 2 August & 10 August 1888, [JJFXK] (BMNH, NMS), ♂ 4 July, ♂ 6 July, ♀ July & ♂♀ 28 July, 2♀♀ 2 August, 2♂♂ 9 August & 2♂♂ 10a August 1888, JJFXK, conf. JPOC (NMI); **L. Derravaragh** (N4663), adults May-September 1964, MK, IETS 1973/1974: (N4169), Coolure Bay, 32 adults, (N4366), near Old Court, adult, (N4067), near Donore House, 3 adults, (N3968), bay near entry of R. Inny, adult, (N4168), near Derrya, 3 adults, PG; **L. Ennell** (N4146), adults May-September 1964, MK, (N4046), Tudenham, 2♀♀ 9 July 1997, (N3847), 2 larvae sheltered rocky shore, 15 May 1973, (N3947), 8 larvae reed bed, 15 May 1973, JPOC, (N3944), Robin's own shore, IETS 1973/1974 2 adults, PG; **L. Lene** (N5368), larvae 1996/1997, JW; **L. Owel** (N4156), Lady's Island, IETS 1973/1974 5 adults, PG; **L. Ree** (N0245), Carby [Carberry] Island, adults 18 August 1958, PHW (BMNH); **L. Sheelin** (N4381), off Goreport Point, IETS 1973/1974 adults, PG; **Milltownpass R.** (N5042), larvae June 1989, DAG/JML, det. JML; **R. Deel** (N5565), larvae July 1991, (N5953), larvae July 1991, (N6949), larvae September 1989 & July 1991, DAG/JML, det. JML; **R. Shannon** (N0440), dredge 6 larvae & ♂ pupa 13 July 1972, AFF, det. JPOC; **White Lake** (N5172), near Castlepollard, adult 3 August 1967, JRH. **WEXFORD: Corock R.** (S8921), larva 20 July 2015, JPOC/MAOC, det. JPOC; **R. Boro** (S9636), Soldiers Hole, 10♂♂7♀♀ 23 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9739), Enniscorthy, 4♂♂8♀♀ 27 July 2015, (S9738), 3♂♂3♀♀ 28 July 2015, all JPOC/MAOC, det. JPOC; **Tara Hill** (T2062), adults 3-4 August 1938, BPB (BMNH); **Tintern Abbey** (S7910), small river, ♀ 6 July 1990, JPOC; **Urrin R.** (S8943), bridge near Mangan, 3 larvae 3 July 2014, MAOC/JPOC, det. JPOC, (S9738), Enniscorthy, ♂♀ 28 July 2015, JPOC/MAOC, det. JPOC. **WICKLOW: Derriana R.** [Derneen] (S9987), larva 23 July 1973, JPOC; **Glencullen R.** (O1919), ♂♀ 22 July 1973, JPOC; **King's R.** (O0401), LT 5♀♀ 22-23 July 1973, JPOC; **L. Dan** (O1502), 43♂♂44♀♀ 4 August & 4♂♂19♀♀ 24 August, 1972, 2♀♀ 21 July, 34♂♂43♀♀ 1 August & 2♀♀ 19 August 1973, LT 2♂♂3♀♀ 21-22 June 1973, 336 larvae exposed rocky shore and 212 larvae sheltered rocky shore, 27 April 1973, JPOC, larvae 1996/1997, JW, (O1504), 7♂♂11♀♀ 16 August 1972, JPOC; **Lower L. Bray** (O1416), ♂♀ 18 August 1973, JPOC; **Powerscourt Waterfalls** (O1912), ♂ 31 July 1986, CM/OSF (SINMNH); **R. Avonmore** (T1593), larva & ♀ 21 July 1973, JPOC; **R. Bray** (O2518), ♂♀ 22 July 1972 (NMI), (O2417), outside Little Bray, ♂♀ 22 July 1972, JPOC; **R. Ow** (T0981), ♀ 28 July 1973, JPOC; **R. Slaney** (S8892), LT 5♂♂31♀♀ 24-25 July 1973, JPOC; **Vartry R.** (T2797), ♀ pupa 20 July 1973, JPOC.

APATANIIDAE

78. *Apatania auricula* (Forsslund, 1930)

FIGURES 191-192. Known Irish and European distributions of *Apatania auricula*.



Apatania auricula has not been found in Britain. First recorded from the Killarney area of County Kerry, it was misidentified as *A. fimbriata* (Pictet, 1843). However, Forsslund (1930) noted that Irish adults were conspecific with his new species *A. auricula* and DNA-barcoding has since confirmed the latter to be a good species (Salokannel, Rantala and Wahlberg, 2010). To-date, *A. auricula* has only been found in Counties Clare and Kerry. In the former, it has only been taken on the exposed shore of a lake in the north of the county. By contrast, the species is often common and abundant in lakes in Kerry, ranging from acidic to limestone ones. There is no reason to doubt that the species will not also be found in suitable lakes across the county border in County Cork. The cased larvae occur on lake shores with stony substrata. The cases are curved and composed of small mineral particles. The larvae feed on epilithic algae and cyanobacteria which are scraped off the stony substratum. Larvae of the genus possess an osmeterium, an expandable horseshoe-shaped gland situated between the pronotum and the head. If an individual is threatened, the osmeterium produces some 40 different fatty acids which serve as a defence against predatory invertebrates such as the larvae of *Rhyacophila* (Wichard, Arens and Eisenbeis, 2002; Waringer and Graf, 2011). However, these chemicals do not protect the larvae from being eaten in large numbers by brown trout. The adults fly for much of the year. The artificial fly the 'Plain Rail' is tied by trout anglers on the Killarney lakes to imitate them. Outside Ireland, the species is only found in a limited area of northern Europe. Schmid (1954) described its range as "une curieuse répartition géographique". O'Connor (1978a) and Murray and O'Connor (1993) discuss the status of *A. auricula* in Ireland where it may be a boreo-alpine survivor from the Ice Age, possibly surviving on nunataks.

Flight period: January–May (8 January–16 May); July-November (3 July–20 November). No specimens were taken in light-traps run on Lough Leane and Muckross Lake on 19-20 December 1973, 20-21 December 1973, 28-29 December 1973, 24-25 June, 25-26 June and 26-27 June 1973. Large hatches of adults have been observed in April and October.

Counties and 10km squares: Clare, Kerry (2/32). The species is known from twelve 10km squares (12/1019).

Published records

Morton, 1887c as *Apatania fimbriata* (**KERRY:** Killarney, Gap of Dunloe (V8785), (V8787)) (Anger [Augher] and Black Lakes); L. Garagarry (V9983)). *King, 1888a* as *Apatania fimbriata* (**KERRY:** Coppagh Glen (W0382); Gap of Dunloe (V8787); Garagarry Laogh (V9983)). *King and Halbert, 1910* as *Apatania fimbriata* (**KERRY:** Coppagh Glen (W0382); Gap of Dunloe (V8787) (lakes); Garagarry L. (V9983); Windy Gap near Kenmare (V9178)). *Forsslund, 1930* as *Apatelia* (**IRELAND**). *Praeger, 1950* as *Apatania fimbriata* (**KERRY:** four stations). *Kimmins, 1951* as *Apatidea* (**KERRY:** Killarney). *Schmid, 1954* (**IRELAND**). *Hiley, 1976* (**KERRY:** recently reared by JPOC). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1978a* (**IRELAND:** widespread in the south-west); *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *Wallace, 1980* (**KERRY**). *O'Connor, 1981* (**IRELAND:** South-west. **KERRY:** Killarney Lakes). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake; Upper Lake [Killarney]). *Solem, 1985b* (**KERRY**). *O'Connor, 1987* (**CLARE**. **KERRY**). *Crichton, 1990* (**CLARE**. **KERRY**). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** South-west Ireland). *Murray and O'Connor, 1993* (**KERRY:** Killarney lakes); *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Bracken, 1998* (**KERRY:** Killarney). *Giller, O'Connor and Kelly-Quinn, 1998* (**IRELAND:** south-west). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** South-west Ireland only; abundant). *O'Connor and Wise, 2004* (**KERRY:** R. Laune). *O'Connor and Nelson, 2012* (**IRELAND**). *O'Connor and Nelson, 2012* as *Apatania fimbriata* (listed as a misidentification). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**KERRY:** Cloonaghlin L. (V6070); Loughbarfinnihy (V8476)). *Baars et al., 2014* (**IRELAND:** recorded in 2 of 12 upland peatland lakes).

Unpublished records and voucher specimens

CLARE: L. Lickeen (R1691), 23♂♂3♀♀ 31 August 1973, JPOC. **KERRY: Derriana L.** (V6073), ♂ 6 July 1973, (V6573), 40♂♂9♀♀ 26 August 1973, JPOC; **Doolough** (V9585), LT 8♂♂ 12-13 October 1972, JPOC; **Kenmare** [Cloonee and other loughs nearby] (V8164), 6♂♂♀ 18 August 1882, JJFXK, conf. JPOC (NMI), adult 18 August 1902, JJFXK (BMNH); **Killarney**, adults 5 August, 11 August & 14 August 1887, [JJFXK] (BMNH), 4♂♂♀ 5 August, ♂ 6 August, 3♂♂ 11 August & ♀ 14 August 1887, JJFXK, conf. JPOC (NMI); **Killarney Lakes**, trout stomachs, 81 larvae, UCD, det. JPOC; **L. Caragh** (V7292), 10♂♂♀ 27 August 1973, JPOC; **L.**

Currane (V5267), LTS 173♂♂42♀♀ 25-26 August & 8♂♂♀ 15-16 October 1973, JPOC; **L. Doon** [L. Slat] (Q6107), 46♂♂21♀♀ 28 August 1973, JPOC; **L. Garragarry** (V9983), larvae June 1974, IDW; **L. Guitane** (W0385), 20♂♂3♀♀ 10 October 1972, 7♂♂7♀♀ 14 October 1973, JPOC, (W0185), larvae extremely abundant, June 1974, IDW; **L. Leane**, adult 20 October 1946, JRH (as *Apatidea fimbriata*), (V9488), Ross Bay, ♀ 25 February 1974 (others seen flying), 5♂♂♀ 27 March 1974, open lake, 3♀♀ 6 April 1974, Honeycombs, ♀ 21 March 1973, (V9686), LTS 13♂♂ 13-14 April, 30♂♂6♀♀ 20-21 October & 2♂♂ 18-19 November 1973, 36♂♂16♀♀ 24 April 1973, (V9291), Golf Course, ♀ 17 April 1973 (NMI), ♂ 23 October 1974 (NMI), ♂♂♀♀ 10 November 1977 (NMI), numerous ♂♂♀♀ 20 October 1994, 11♂♂ 15 September 1981 (NMI), (V9188), shore-line, 2♂♂ 4 September 1972, 10 larvae exposed rocky shore, 4 larvae reed bed & 7 larvae sheltered rocky shore, 10 April 1973, (V9686), Castlelough Bay, LT 4♂♂ 8-9 January 1973, (V9787), Abbey shore, 12 larvae 20 April 1976, MAOC, det. JPOC (NMI), (V9188), Mountain shore, 4♀♀ 3 April 1974, (V9291), Hotel Europe, 3♂♂♀ 16 & 2♂♂ 23 October 1973, ♀ 20 November 1973, open lake, 3♂♂2♀♀ 3 July 1973, (V9488), Ross Bay, 6♂♂♀ 6 November & 3♂♂ 9 November 1973, (V9188), O'Sullivan's Cascade shore, 10♂♂12♀♀ 17 April & 7♂♂5♀♀ 13 October 1973, JPOC; **L. Nakirka** (V7389), 4♂♂♀ 27 August & ♀ October 1973, JPOC; **L. Slat** (Q6008) [corrected], Stadbally, adult 13 September 1982, EGH, det. RAJG (BMAG) (per IDW); **Muckross Lake** (V9485), Brickeen, LT 3♂♂ 27-28 March 1973, (V9485), Colleen Bawn (Baun), 3♂♂ 16 May 1972, 2♂♂ 28 March 1973, LT 3♂♂ 11-12 October 1972, (V9685), Goleen, LTS ♂ 14-15 and 12♂♂ 25-26 October 1973, (V9684), Torc shore, 11♂♂5♀♀ 12 October 1973, ♂♂♀♀ 10 September 1981 (NMI), (V9485), LT ♂♂ 11-12 October 1972, JPOC (NMI); **R. Laune** (V8991), Laune Bridge, ♀ 13 October 1973, JPOC; **Upper Lake, Killarney** (V9181), shore-line, 3♂♂♀ 6 September 1972, (V9181), 14 larvae exposed rocky shore and larva sheltered rocky shore, 13 April 1973 (NMI), JPOC.

79. *Apatania muliebris* McLachlan, 1866

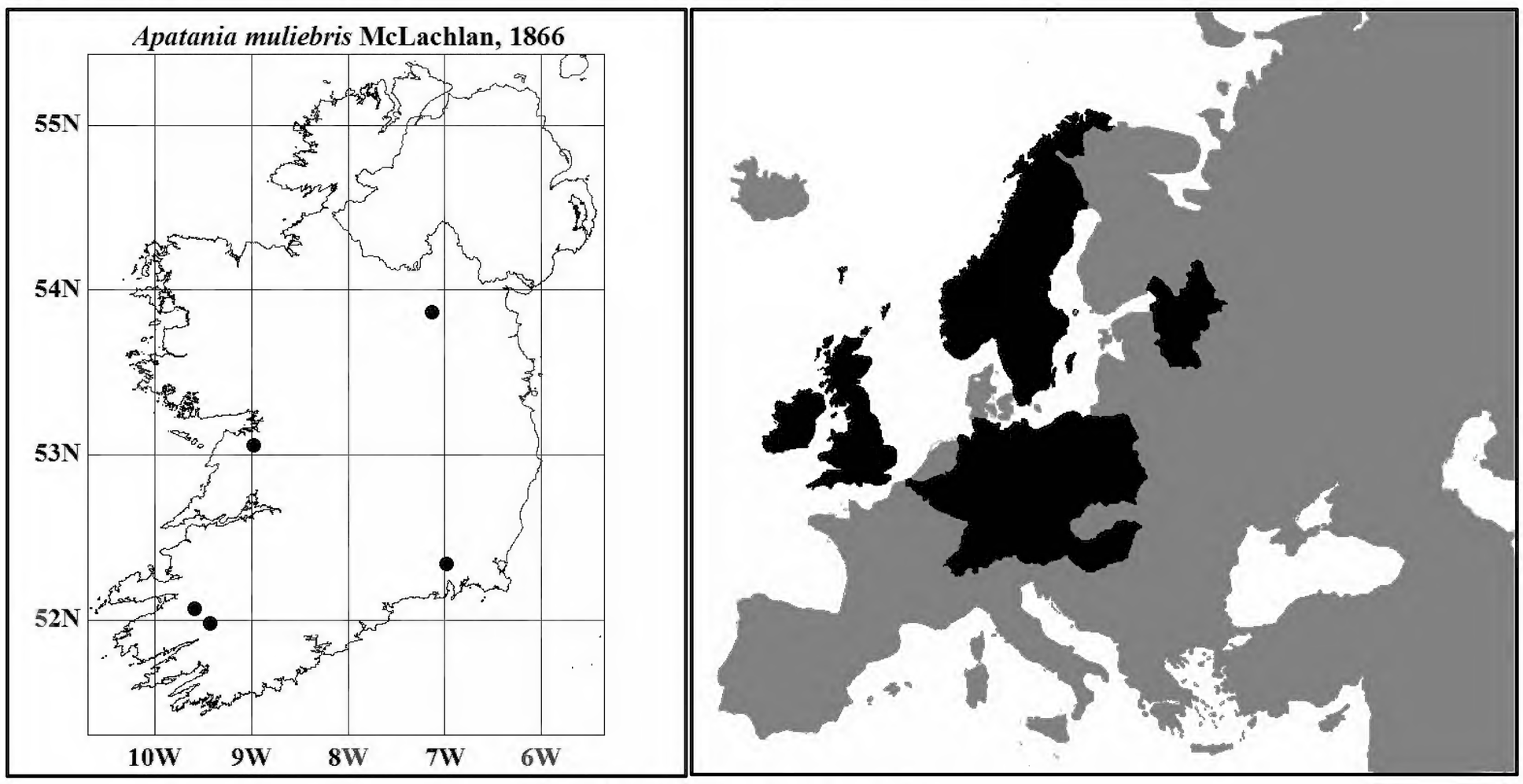
Apatania muliebris is a local species in Ireland. It is a parthenogenetic caddisfly usually found in spring-fed streams with a stony substratum. However, it has also occurred in trickles and in a ditch fed by ground water. No males have been found. Like many asexually reproducing species, it exists in a variety of morphological forms with each isolated population often showing consistent differences from its neighbouring colonies. This has led various authors to regard these slightly different forms as subspecies or even as full species. As a result of a study of specimens in the British Isles, it was decided that *A. muliebris* should be regarded as a single, variable species in these islands (Barnard and O'Connor, 1987). The cased larvae feed on epilithic algae and cyanobacteria which are scraped off the stony substratum. Populations in streams are often very small and are very vulnerable to human and

animal disturbance. Wallace (1991) considers it to be a recently evolved glacial relict species. Curiously, on the Isle of Man, larvae were discovered in two managed streams with *Hydropsyche angustipennis*. Normally, these two species would be put at ecologically opposite ends of running water systems (O'Connor, Wallace and Wallace, 1993). *A. muliebris* has a restricted and mainly northern European distribution.

Flight period: April (17 and 19 April) and September (11 September). There are very few Irish records. Barnard and Ross (2012) give the British flight period as May–June, August–October.

Counties and 10km squares: Cavan, Clare, Kerry, Wexford (4/32). The species is known from five 10km squares (5/1019).

FIGURES 193-194. Known Irish and European distributions of *Apatania muliebris*.



Published records

Fahy, 1972a as *Apatidea* (unsafe larval identification (Wallace, pers. comm.)). *O'Connor, 1978a* (**KERRY:** adult. [West of Ireland, this refers to Fahy's above record]). *Wallace, 1980* (**KERRY**). *O'Connor, 1987* (**KERRY:** two adults identified as *Apatania cimbrica* Nielsen and *A. nielseni* Schmid). *Barnard and O'Connor, 1987* (**KERRY:** O'Sullivan's Cascade (V9188)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Murray and O'Connor, 1993* (**KERRY:** Blue pool (V9786); Laune Bridge (V8991); O'Sullivan's Cascade (V9188)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (GALWAY [This refers to Fahy (1972a)]. **KERRY**). *Barnard and Ross, 2012* (**IRELAND**).

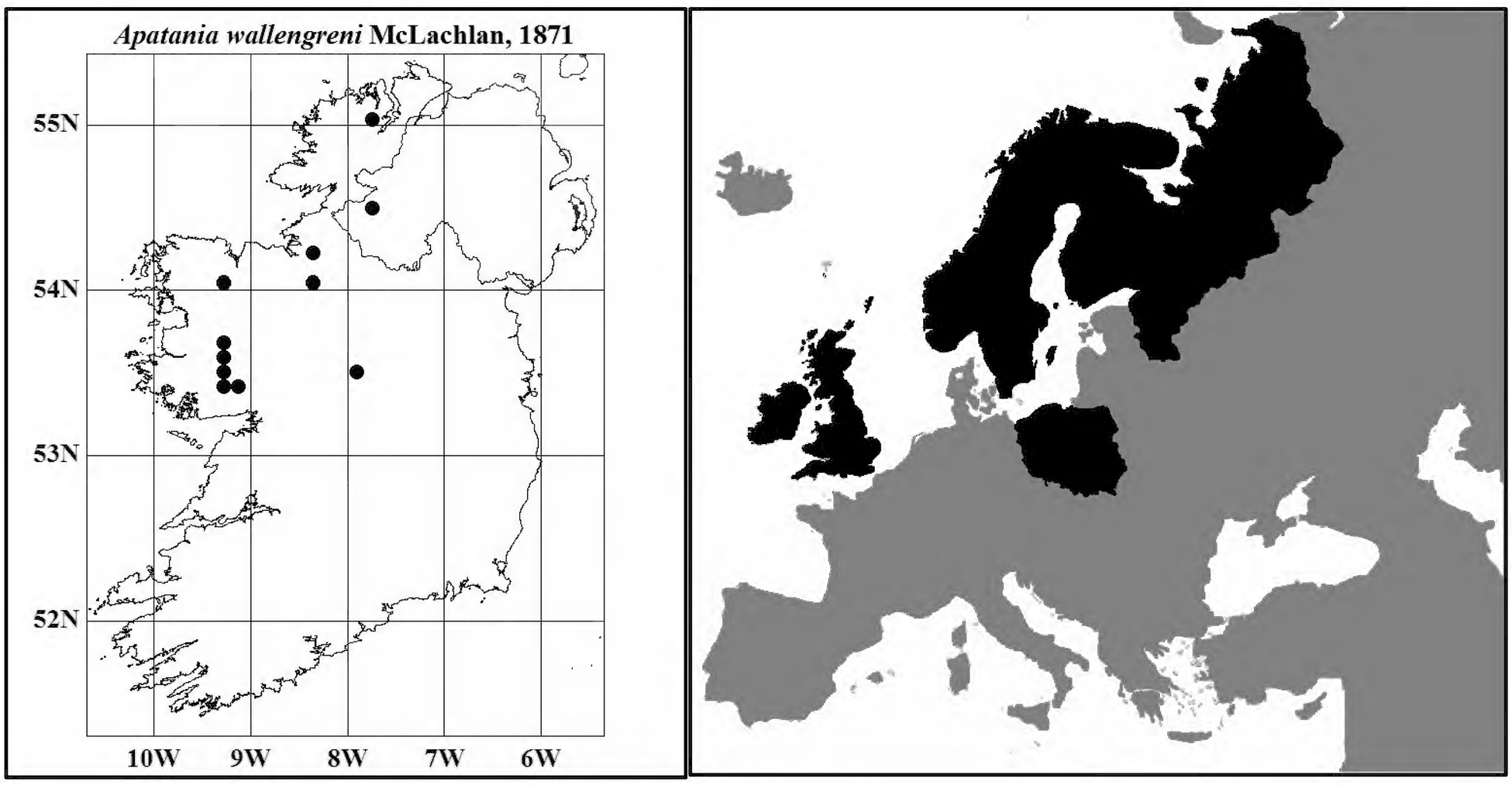
Unpublished records and voucher specimens

CAVAN: Virginia Woods [Deerpark] (N5987), in a spring and small stream, larva 20 March & ♀ pupa 6 April 1988, JPOC/MAOC, det. JPOC (NMI). **CLARE: Slieve Carran** (M3204), Burren, stream side *Corylus* scrub at cliff base, ♀ 11 September

1986, MCDS, det. JPOC (NMI). **KERRY: Blue Pool** (V9786), in side trickles, larvae 1972, IDW (Wallace Coll.); **Laune Bridge** (V8991), ditch fed by ground water, larvae 1972, IDW (Wallace Coll.); **O'Sullivan's Cascade** (V9188), ♀♀ 17 April 1973, JPOC (NMI), larva 27 August 1987, JPOC. **WEXFORD: J. F. Kennedy Park** (S7218), streams, ♀ 19 April 1995, JPOC.

80. *Apatania wallengreni* McLachlan, 1871

FIGURES 195-196. Known Irish and European distributions of *Apatania wallengreni*.



Apatania wallengreni is a local species occurring in central, western and north-western Ireland. The cased larvae live on stony shores in mainly large lakes, both calcareous and acidic. It is interesting to note that this species and *A. auricula* have never been found together in the same Irish lake. King and Halbert (1910) reported probable females from Cottian, County Donegal. The author found the relevant specimens (3♀♀) in a King store-box on loan from the Hunterian Museum and Art Gallery and confirmed their identity. Cottian is based on the Leannan River but King may have obtained the specimens at some of the lakes in the locality or they were carried by the wind from these water-bodies. The larvae feed on epilithic algae and cyanobacteria which are scraped off the stony substratum. As the flight period of the adults is very early, the species may have been overlooked in some areas. Adults can hatch in large numbers and are fed on by brown trout. The species has a limited northern European distribution.

Flight period: April–June (4 April–22 June).

Counties and 10km squares: Donegal, Fermanagh, Galway, Mayo, Sligo, Westmeath (6/32). The species is known from eleven 10km squares (11/1019).

Published records

King and Halbert, 1910 (**DONEGAL:** Cottian (C1318), females probably referable to

this species). *Praeger, 1950* (**DONEGAL**). *O'Connor, 1978a* (**IRELAND:** rediscovered); *O'Connor, 1978b* (**WESTMEATH:** Coosan Point, L. Ree (N0446)). *O'Connor and Norton, 1978* (**WESTMEATH:** Coosan Point, L. Ree (N0446)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1979* (**GALWAY:** L. Corrib (M1852)). *Wallace, 1980* (western Ireland). *O'Connor, 1987* (**DONEGAL**. **GALWAY**. **MAYO**. **WESTMEATH**). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** western Ireland). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** western Ireland). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and O'Connor, 2015a* (**FERMANAGH:** Lower L. Erne (H1758)).

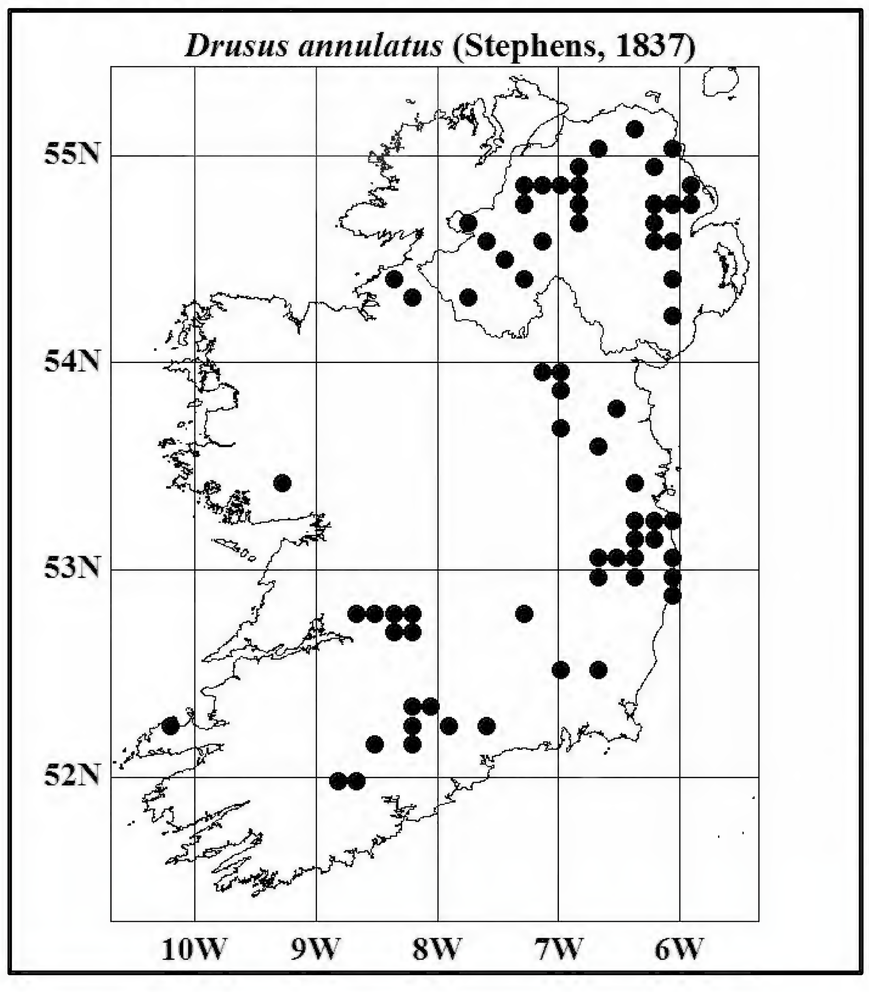
Unpublished records and voucher specimens

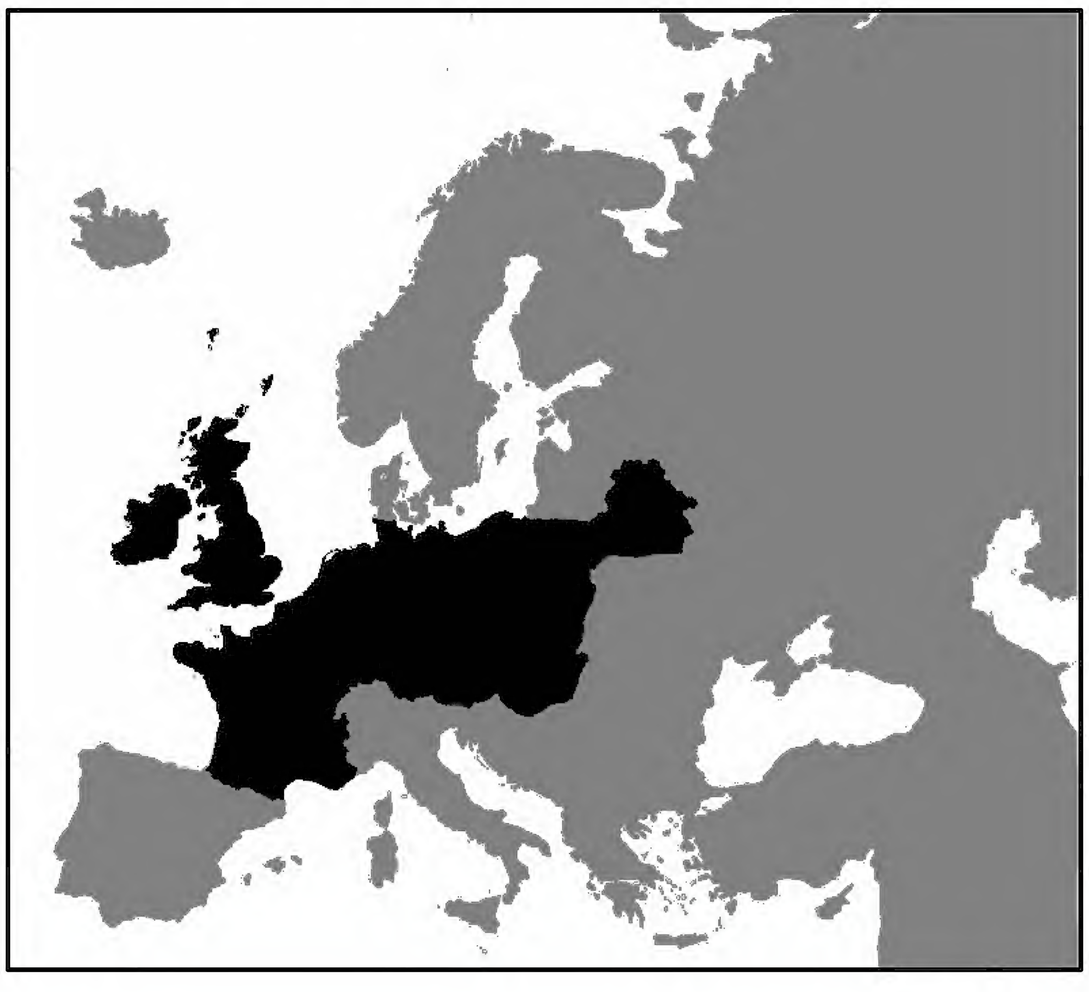
DONEGAL: Kilmacrenan [Cottian (C1318)], 3♀♀ 22 June 1891, [JJFXK], conf. JPOC (HMAG). **FERMANAGH: Lower L. Erne** (H1758), near White Cairn, Castle Archdale County Park, ♂4♀♀ 13 May 2015, JPOC/MAOC, det. JPOC (NMI). **GALWAY: L. Corrib** (M1343), adult Oughterard, 24 May 1947, JRH, (M2241), Cloonmore, LT ♂ 4 April 2015, MG/CC, det. MG. **MAYO: L. Carra** (M1673), adults abundant April and early May 1964, MK; **L. Conn** (G1516), adults 15-24 April 1968, good hatches, trout feeding on them, JRH; **L. Corrib** (M1852), Salthouse Bay, 3♂♂♀ 15 April 1979, MFOG, det. JPOC (NMI); **L. Mask** (M1259), (M1465), adults April and early May 1964, MK. **SLIGO: L. Arrow** (G7711), adult April 1920, L. M. Brook (MANM) (per IDW); **L. Gill** (G7234), larvae 20 July 1989, DAG/JML, det. JML. **WESTMEATH: L. Ree** (N0446), Hare Island, larvae 19 June 1976, Coosan Point, ♂♂♀♀ 2 May 1977, JPOC.

LIMNEPHILIDAE

81. *Drusus annulatus* (Stephens, 1837)

FIGURES 197-198. Known Irish and European distributions of *Drusus annulatus*.





Drusus annulatus is widely distributed in Ireland. The cased larvae occur in stony rivers and streams where they graze on epilithic algae. The cases are curved and composed of mineral particles. The larvae have distinctive brown heads and pronota with granular surface sculpturing. In the Glenfinnish River, County Cork, five larval instars were identified. There was delayed egg hatching and the appearance of first instars over several months. The species was clearly univoltine there (Giller, O'Connor and Kelly-Quinn, 1998; Sangpradub, Giller and O'Connor, 1999). *D. annulatus* has a mainly central and western European distribution.

Flight period: (May) July–October (3 July–4 October). Adults were also taken from 22-29 May.

Counties and 10km squares: Antrim, Carlow, Cavan, Clare, Cork, Derry, Down, Dublin, Fermanagh, Galway, Kerry, Laois, Leitrim, Meath, Sligo, Tipperary, Tyrone, Waterford, Wexford, Wicklow (20/32). The species is known from sixty-nine 10km squares (69/1019).

Published records

King, 1888a (**GALWAY:** Castlekirk [Castle Kirk] (M1244)). *King and Halbert, 1910* (**GALWAY:** Castlekirk [Castle Kirk] (M1244)). *Praeger, 1950* (**GALWAY:** Castlekirk [Castle Kirk] (M1244)). *Fahy, 1972a* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Wallace, 1980* (**KERRY and other counties**). *O'Connor and Good, 1984* (**SLIGO:** Ben Bulben, stream (G7346)). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Tierney, Kelly-Quinn and Bracken, 1998* (**WICKLOW:** no sites given for the species). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Wright et al., 2000* (**NORTHERN IRELAND:** 9 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 58 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Donohue et al., 2009* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Coopers Water (J2175); Crew Burn (J1370); Doagh R. (J2693); Glenariff R. (D2221); Doagh R. tributary (J2593); Legnagooly Burn (D1312); R. Clady (Clady Water) (J1984); R. Dervock (D0233); R. Larne (D3700); Ross Burn (J1597); Six Mile Water (J3195). **DERRY (LONDONDERRY):** Cam Burn (C8421); R. Ballinderry (H7379); R. Douglas (H7796); R. Inver (C5301); R. Owenalena (C7406); R. Owenrigh (C6606). **DOWN:** Begny Hill Feeder (J2850); R. Kinnahalla (J2328). **FERMANAGH:** Lisblake Burn (H1637); R. Boho (H1344). **TYRONE:** Black Water (H2974); Dreenan Burn (H2184); Dunnyboe Burn (H4599); Granagh Burn (H6072); Lissan Water (H8081); R. Cleen (H4748); R. Owenreagh (H3365); Tullynadall Burn (H4490)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456);

R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *Anon., 2015a* (**WICKLOW:** Pollaphuca (O1001); Wicklow Mountains National Park (T1196)). *Lucey, 2015* (**CAVAN:** Blackwater (Kells) (N6998); Nadreegeel L. stream (N5596). **DUBLIN:** R. Dargle (O2518). **MEATH:** [near] Athboy (N6471); Mattock R. (O0180); Skane R. (N8960). **WICKLOW:** Greese R. (N8601); [near] Newtown Mount Kennedy (O2906)).

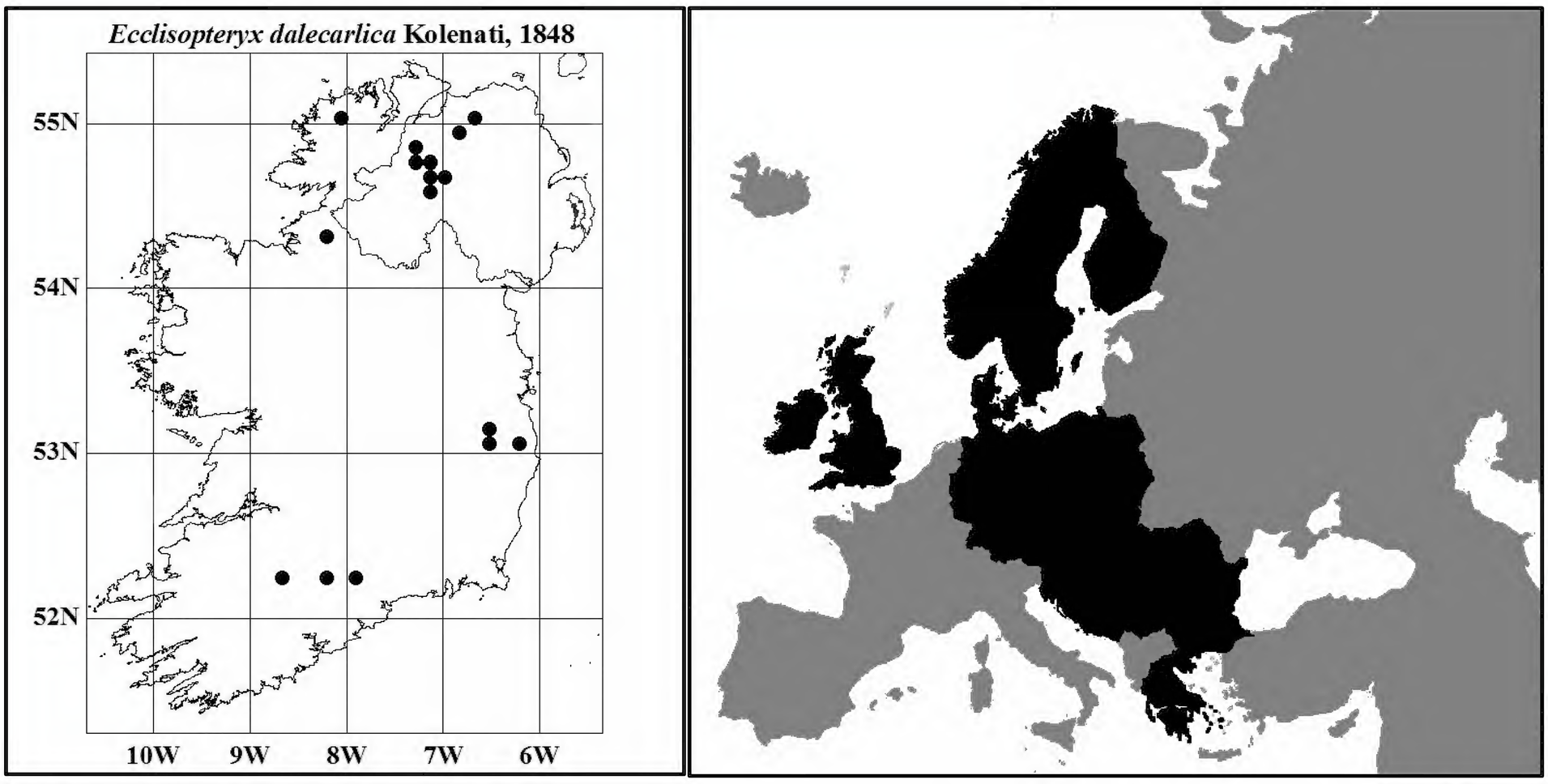
Unpublished records and voucher specimens

CARLOW: St Mullins (S7238), stream, larva 5 July 2014, MAOC/JPOC, det. JPOC. **CAVAN: Barora R.** (N6893), 16♂♂7♀♀ 31 August 1972, JPOC (NMI). **CLARE: Ardcloony R.** (R6770), ♂ 3 September 1973, JPOC; **O'Neill's R.** (R5766), 4♂♂ 2 September 1973, JPOC (NMI); **R. Mountrice** (R5866), ♂♂ 2 September 1973, JPOC. **CORK: Rahan** (W6398), marshy area near small river, light 6♀♀ June-September 1988, PS, det. JPOC; **R. Araglin Catchment** (R8702), larvae, NS & PSG; **R. Shournagh** (W5380), larvae, MM, det. JPOC (NMI). **DERRY: Formil** (C7611), Gelvin, LT ♂ 5 September 2014, KGMB, det. JPOC. **DUBLIN: Glencullen R.** (O1919), 2♂♂ 27 September 1977, JPOC; **Owendoher R** (O1324), 2 larvae & ♂♀ 27 September 1977, JPOC; **R. Tolka** (O0938), larva 7 July 1972, AFF, det. JPOC. **GALWAY: L. Corrib** (M1146), Upper, ♀ 30 September 1980, BC, conf. JPOC (NMI). **KERRY: R. Glenahoo** (Q5410), larva 7 July 1972, ♂♂♀ 28 August 1973, JPOC. **LAOIS: Oweg (Ouveg) R.** (S4473), larvae 16 August 2004, PS. **LEITRIM: Bonet R.** (G8444), larvae 25 June 1991, (G8741), larvae 26 March & 25 June 1991, (G8738), larvae 26 March & 24 June 1991, DAG/JML, det. JML; **Owenmore R.** (G8839), larvae 26 March 1991, DAG/JML, det. JML. **SLIGO: Clogh Valley** (G7346), stream margin, ♂♀ 30 July 1983, JAG, det. JPOC (NMI). **TIPPERARY: Kilmastulla R.** (R7871), (R7269), (R6867), larvae/adults 1976-1977, MAOC; **L. Diheen** (R8824), summit of the Galtees, 2500ft [762m], adult 29 May 1944, AWS, det. JRH. **WATERFORD: Knockmealdown Mountains** (S0408), pass in the, ♂ 17 August 1981, HM, det. H. Malicky; **Mahon Falls** (S3009), ♂ 3 July & ♂ 5 July 1988, (S3108), stream, 4 larvae 5 July 1988, JPOC (NMI), ♂ 25 July 2015, JPOC/MAOC, det. JPOC (NMI), top of stream in bog near the Falls, larvae 25 May 1997, JPOC. **WEXFORD: Killoughrim Forest** (S9041), stream, 2♂♂ 27 May 1987, JPOC. **WICKLOW: Annalecka Brook** (O0001), 2♂♂ 23 August 1973, 3 larvae 22 April 1974, JPOC (NMI); **Browns Beck Brook** (Carrigower R.) (S9194), ♂ 20 September 1973, JPOC; **Calary** (O2312), ♀ September 1891 (misidentified as *Goera pilosa*), det. JPOC (NMI); **Lower L. Bray** (O1416), stream from the, ♂♀ 18 August 1973, JPOC (NMI), (O1346), larva 1996/1997, JW; **Potters R.** (T2985), ♂♂ 19 September 1973, JPOC; **R. Liffey** (O0514), Ballysmuttan, adult 9 July 1947, JRH; **stream** (T2796), Glenealy, ♂ 22 May 1973, JPOC; **stream** (S8695), 4♂♂2♀♀ 20 September 1973, JPOC; **stream** (O0714), entering R. Liffey, 3♂♂2♀♀ 18 August 1973, JPOC; **Vartry R.** (O2108), ♀ 4 August & 22♂♂2♀♀ 24 August 1972, ♂ 19 August 1973,

JPOC.

82. *Ecclisopteryx dalecarlica* Kolenati, 1848

FIGURES 199-200. Known Irish and European distributions of *Ecclisopteryx dalecarlica*.



Originally misidentified as *Ecclisopteryx guttulata* (Pictet, 1834) in the British Isles, *E. dalecarlica* is a local Irish species. However, because of its early flight period, the species may be under-recorded as an adult. The cased larvae occur in stony rivers and streams where they may graze on epilithic algae. However, Solem (1985a) considered them to be typical shredders from stomach analyses. The curved cases are composed of mineral particles. In the Glenfinnish River, County Cork, there were clearly five larval instars (Sangpradub, Giller and O'Connor, 1999). The species has an unusual European distribution.

Flight period: May–June (20/30 May–22 June). There are few adult records. Barnard and Ross (2012) give the British flight period as May–June (July).

Counties and 10km squares: Clare, Cork, Derry, Donegal, Leitrim, Tipperary, Tyrone, Wicklow (8/32). The species is known from sixteen 10km squares (16/1019).

Published records

O'Connor, 1978a as *Ecclisopteryx guttulata* (**WICKLOW**). *O'Connor, 1987* as *Ecclisopteryx guttulata* (**WICKLOW**). *Wallace, Wallace and Philipson, 1990* as *Ecclisopteryx guttulata* (**IRELAND:** eastern Ireland). *Ashe, O'Connor and Murray, 1998* as *Ecclisopteryx guttulata* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* as *Ecclisopteryx guttulata* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* as *Ecclisopteryx guttulata* (**CORK:** Glenfinnish R. (R8810)). *Wright et al., 2000* as *Ecclisopteryx guttulata* (**NORTHERN IRELAND:** 3 out of 70 sampled sites). *Kelly-Quinn et al., 2003* as *Ecclisopteryx guttulata* (**CLARE:** R. Caher, no station given). *Wallace, Wallace and Philipson, 2003* as *Ecclisopteryx guttulata* (**IRELAND:** eastern Ireland). *Bradley and Kelly-Quinn, 2005*

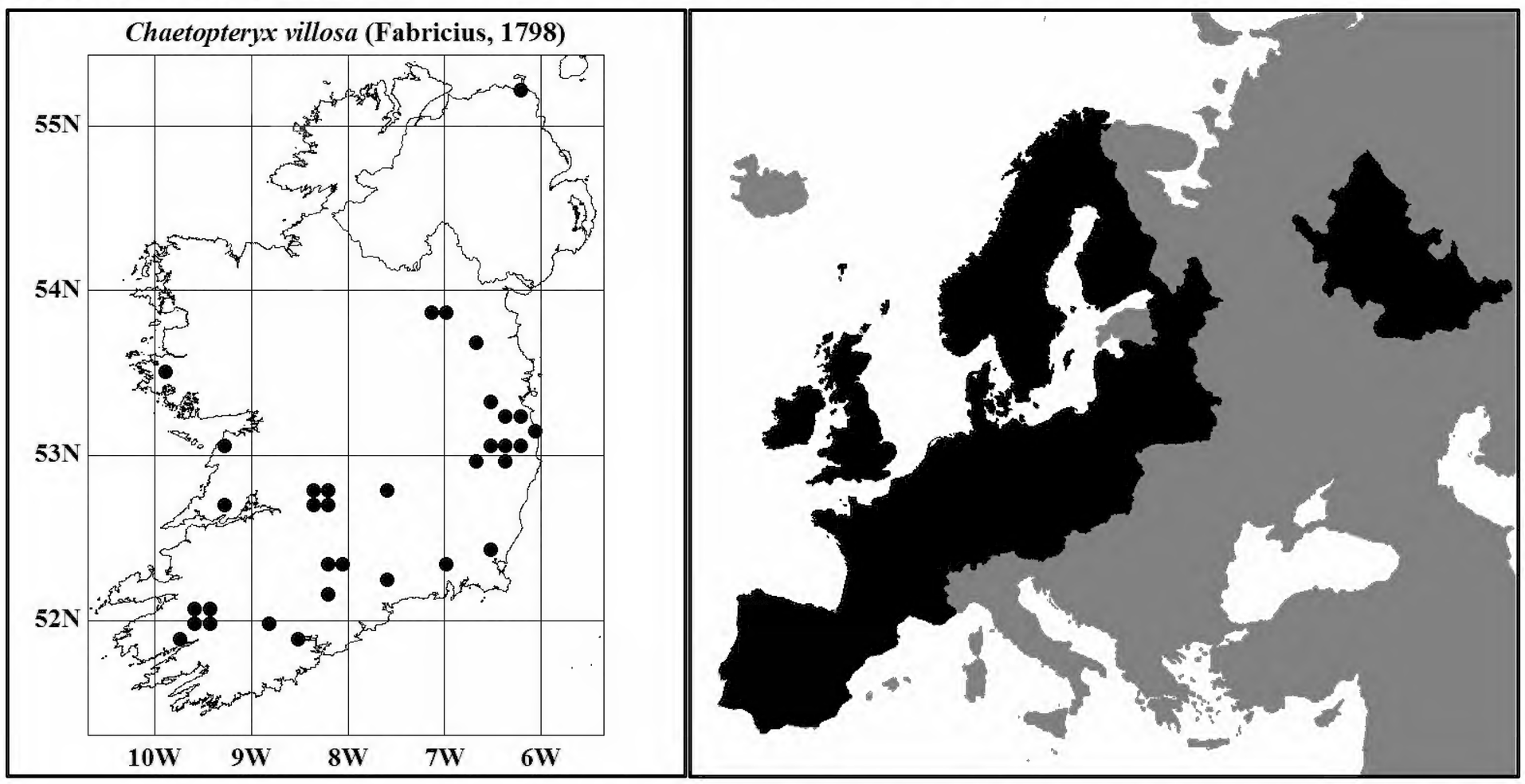
as *Ecclisopteryx guttulata* (**IRELAND:** 23 out of 207 river sites). *Kelly-Quinn et al., 2005* as *Ecclisopteryx guttulata* (**IRELAND:** rivers). *O'Connor, 2010* (**WICKLOW:** Glasnagollum Brook (O0302)). *O'Connor and Nelson, 2012* (**IRELAND**). *O'Connor and Nelson, 2012* as *Ecclisopteryx guttulata* (listed as a misidentification). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Davy-Bowker, 2014* (**DERRY (LONDONDERRY):** R. Agivey (C7912); R. Mayoghill (C8819). **TYRONE:** Dunnyboe Burn (H4599); Granagh Burn (H6072); R. Glenelly (H5691); R. Owenkillew (H6885), (H4387), (H6184)).

Unpublished records and voucher specimens

CORK: Araghin R. (R8810), Glenfinnish Bridge, near Kilworth, larvae 22 May 1990, NS (per PSG), det. JPOC (NMI); **Kilcolman** [Bog] (R5811), MVLT ♀ 12 June 1992, KGMB, det. JPOC (NMI). **DONEGAL: Glenveagh National Park** (C0018), near Owenacoo R., MT ♂ 20-30 May 1998, MCDS, det. JPOC (NMI). **LEITRIM: Bonet R.** (G8741), larvae 26 March 1991, DAG/JML, det. JML. **TIPPERARY: Glenboy** (S1113), larva 5 April 2000, PS, conf. JPOC (NMI). **WICKLOW: Glasngollum Brook** (O0302), near Ballinagee Bridge, 5♂♂♀ 6 June 1973, JPOC (NMI); **L. Dan** (O1502) where stream exits, LT ♀ 21-22 June 1973, JPOC; **R. Liffey** (O0115), Kilbride [Road], adult 13 June 1947, JRH (as *Ecclisopteryx guttulata*).

83. *Chaetopteryx villosa* (Fabricius, 1798)

FIGURES 201-202. Known Irish and European distributions of *Chaetopteryx villosa*.



Chaetopteryx villosa is widely distributed in Ireland but under-recorded. The adults are seldom taken due to their late flight-period so it is more productive to record the larvae. The cased larvae live in streams, rivers and upland oligotrophic lakes. They are omnivorous shredders feeding mainly on detritus. The curved cases are composed of mineral particles with some plant fragments. The adults, whose wings bristle with long stiff hairs, are reluctant to fly. They are well adapted to cold conditions with super-cooling points in the range -4.7^0 to -14.5^0C. Males and females may remain in

copulation for 10-12 days before the female lays her eggs (Solem, 1984). Interestingly, the females lay their eggs above water often on fallen tree logs covered by mosses. Young larvae may leave their matrix and drop into the water before the winter frosts, in contrast to late-laid egg masses, where low winter temperatures stop the development of eggs and larvae until the spring months. For this reason, different larval instars of *C. villosa* can be present in the spring months (Majecka, Majecki and Walaszek, 2011). Malicky (2005) gives two subspecies but only ssp. *villosa* occurs in Ireland. The species is widespread in Europe except for the south.

Flight period: September–October (22 September–22 October) (December). There is also a record from Kilkenny on 1 December (King and Halbert, 1910). There are few adult records. Barnard and Ross (2012) give the British flight period as (August) September–November.

Counties and 10km squares: Antrim, Cavan, Clare, Cork, Dublin, Galway, Kerry, Kildare, Kilkenny, Meath, Tipperary, Waterford, Wexford, Wicklow (14/32). The species is known from thirty-four 10km squares (34/1019).

Published records

King and Halbert, 1910 (**ANTRIM:** Fair Head (lakes) (D1742). **CORK:** Carrigrohane (W6071). **KILKENNY:** Johnstown (S2867). **WICKLOW:** L. Dan (O1502); Roundwood (O1903)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**WICKLOW:** L. Dan (O1502), adults). *Wallace, 1980* (**KERRY and other counties**). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Tierney, Kelly-Quinn and Bracken, 1998* as *V. villosa* (**WICKLOW:** no sites given for the species). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706)). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 52 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Gammell, 2011* (**WEXFORD:** Crory Lower Stream, Edenvale (T0327); R. Sow, Edenvale (T0427)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *Baars et al., 2014* (**IRELAND:** recorded in 7 of 12 upland peatland lakes). *Anon., 2015a* (**KERRY:** Killarney National Park (V9490). **WICKLOW:** Wicklow Mountains National Park (O0100)).

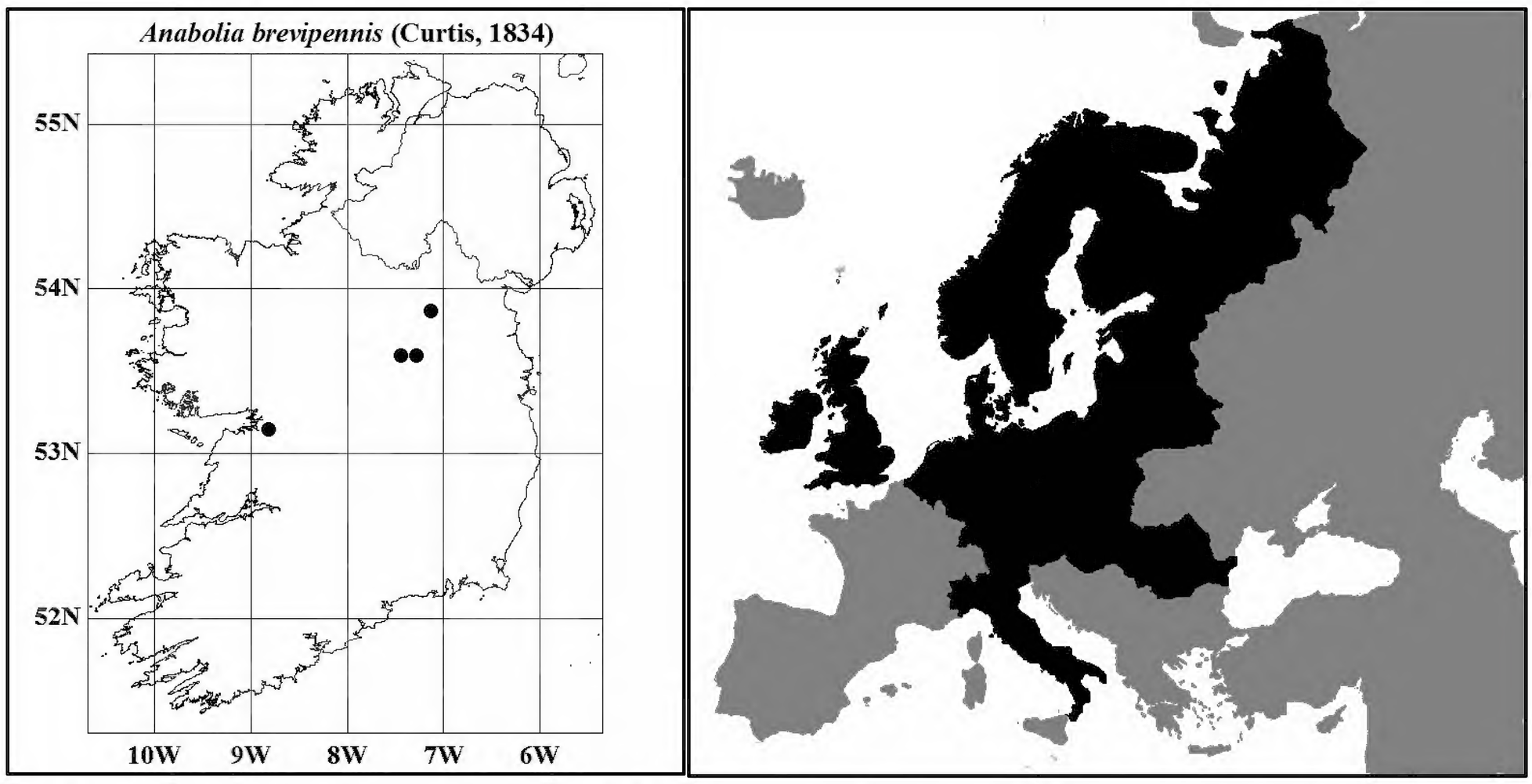
Unpublished records and voucher specimens

ANTRIM: Ballycastle [Fair Head (lakes)] (D1742), 2♀♀, conf. JPOC (NMI). **CAVAN: Barora R.** (N6893), ♂ 4 October 1972, JPOC (NMI); **R. Blackwater** (N5987), Virginia Woods [Deerpark], ♂ 22 September 1985, JPOC (NMI). **CLARE: Knockalough** (R1463), ♂ 18 October 1973, JPOC. **CORK: Carrigrohane** (W6071),

♀, conf. JPOC (NMI); **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.). **DUBLIN: Bohernabreena Lower Lake** (O0823), adult 4 October 1945, JRH; **Glencullen R.** (O1919), ♂♀ pupae 27 September 1977, JPOC. **GALWAY: Connemara National Park** (L7455), Polladirk R., larvae 1991, SV, conf. JPOC. **KERRY: exit stream of Cloghereen** (V9787), larvae June 1974, IDW; **Killarney**, adults, MK, ♀ 1921, EFB, conf. JPOC (NMI); **L. Barfinnihy** (V8476), ♂ 11 October 1972, JPOC (NMI); **R. Cloghereen** (V9886), feeding streamlets, larvae June 1974, IDW, (V9787), larva 28 May 1995, JPOC; **R. Deenagh** (V9590), White Bridge, larvae June 1974, IDW; **streamlet** (V8788), Dungloe Lower, larvae June 1974, IDW; **streamlet** (V9885), Gortagullane, larvae common June 1974, IDW; **streamlet** (V9785), Queen's Drive, larvae June 1974, IDW; **Torc stream** (V9684), 4 larvae 20-24 June 1974, IDW. **KILDARE: Louisa Bridge** (N9936), main outfall, larvae (ii-iv), 12 March 1984, IDW. **MEATH: R. Boyne** (N9271), Stackallen, adult 19 October 1945, JRH. **WATERFORD: Mahon Falls** (S3108), top of stream in bog near the Falls, larvae 25 May 1997, JPOC. **WEXFORD: Oaklands Wood** (S7125), stream, larva 29 June 2014, JPOC/MAOC, det. JPOC. **WICKLOW: Browns Beck Brook** (Carrigower R.) (S9194), larva 23 July 1973, JPOC; **Delgany R.** (O2610), 3 larvae 20 July 1973, JPOC; **Glendalough** (T1196), stream, larva 21 July 1973, JPOC; **L. Dan** (O1502), ♂ 28 September 1909, conf. JPOC (NMI), stream below, 5 larvae 18 June 1974, (O1504), ♂ 20 October 1972, (O1404), stream above, 2 larvae 18 June 1974, JPOC; **Roundwood** (O1903), ♂ 1 October 1909, conf. JPOC (NMI).

84. *Anabolia brevipennis* (Curtis, 1834)

FIGURES 203-204. Known Irish and European distributions of *Anabolia brevipennis*.



Anabolia brevipennis is a local Irish species but probably greatly under-recorded. The adults are very secretive and difficult to collect. The cased larvae live in pools

with dead leaves in alder marshes, bogs and woods, and in turloughs. All these habitats dry out in summer. The distinctive cases are triangular in cross section and constructed of disks cut from dead leaves. The discovery of leaves in a pond with circular holes in them can be a useful aid in finding the larvae which feed on the leaves. Similar, but larger holes are made by *Glyphotaelius pellucidus*. *A. brevipennis* has an unusual European distribution.

Flight period: August (25 August). In additions, reared adults have hatched from 9 June–early July. There are only a very small number of Irish adult records. Barnard and Ross (2012) give the British flight period as August–October with a summer diapause.

Counties and 10km squares: Cavan, Galway, Westmeath (3/32). The species is known from four 10km squares (4/1019).

Published records

Wallace et al., 1983 as *Phacopteryx* (**CAVAN:** Virginia (N5888)). *O'Connor, 1987* as *Phacopteryx* (**CAVAN**). *O'Connor and O'Hanrahan, 1988* as *Phacopteryx* (**WESTMEATH:** Ballynafid lake (N4060), in a pool in a wood). *Crichton, 1990* as *Phacopteryx* (**IRELAND**). *Wallace, Wallace and Philipson, 1990* as *Phacopteryx* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* as *Phacopteryx* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* as *Phacopteryx* (**IRELAND:** very local). *Hannigan, Kelly-Quinn and O'Connor, 2009* as *Phacopteryx* (**CAVAN:** near Virginia (N5888). **WESTMEATH:** Ballynafid Lake (N4060); Scragh Bog (N4259)). *Porst and Irvine, 2009a* (**GALWAY:** Caherglassaun turlough (M4106); Caranavoodaun turlough (M4515)). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), pools and hollows). *O'Connor and Nelson, 2012* (**CAVAN**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

CAVAN: Virginia (N5888), *Alnus* marsh, 4 larva 3 May 1982, 4♂♂2♀♀ reared to adult/pupal stages (11 June-early July), IDW/JPOC (NMI, NML). **WESTMEATH: Ballynafid** (N4060), small lake, larva in small nearby pool containing alder leaves 5 May 1987, ♂ reared 9 June 1987, JPOC (NMI); **Scragh Bog** (N4357), ♂ 25 August 2008, EH, det. JPOC (NMI).

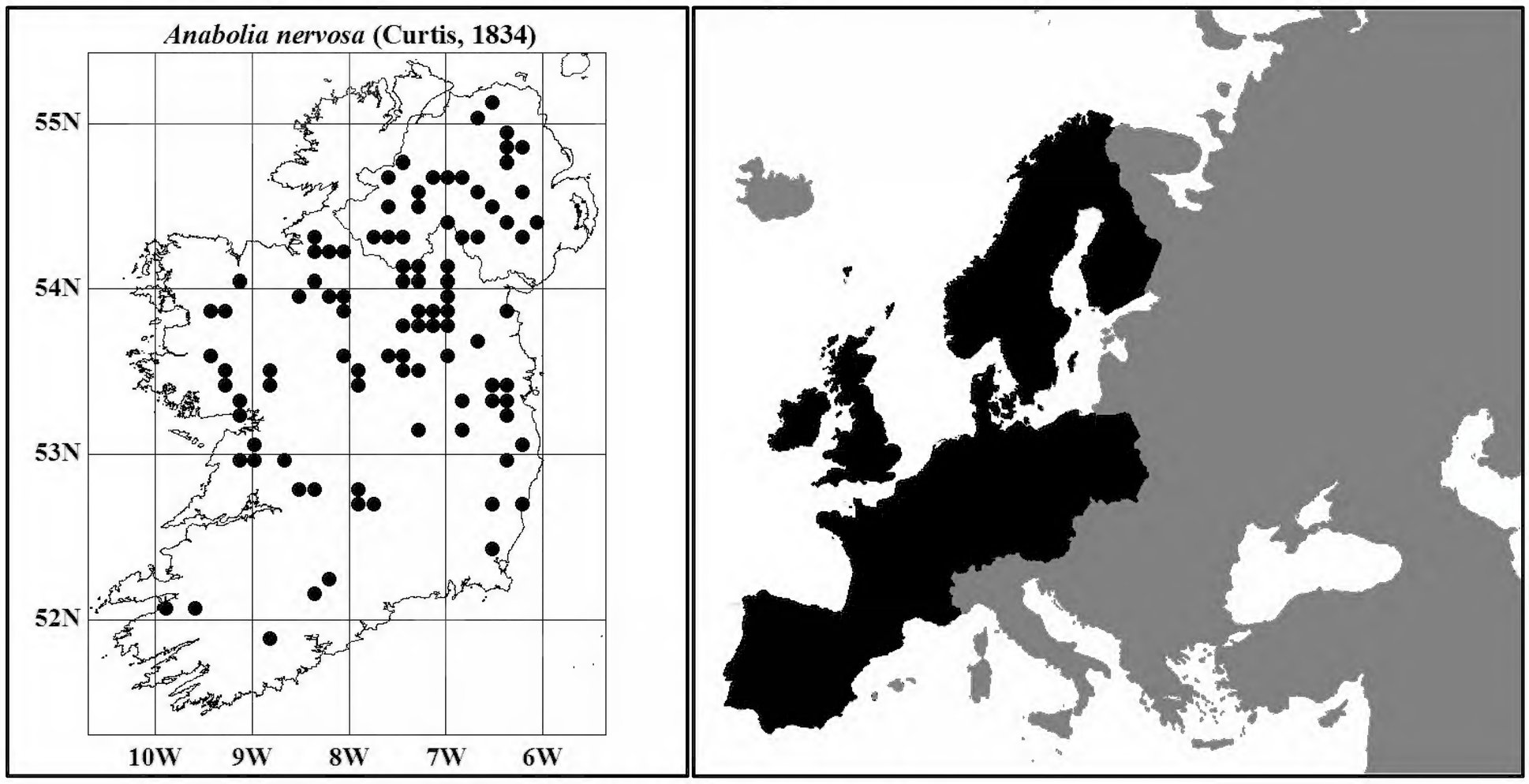
85. *Anabolia nervosa* (Curtis, 1834)

Anabolia nervosa is widely distributed in Ireland and can occur in large numbers especially in County Cavan. The cased larvae live in canals, large ponds, reservoirs, rivers and lakes. Lakes may be calcareous or acidic. The case is variable in shape but many are tubes made of sand grains or plant material with one or more long sticks attached. These may prevent small fish from eating the larvae. The larvae are mainly shredders, feeding on terrestrial leaf litter and submerged vegetation. However, they can also graze or be predacious. They are easily identified from their distinctive head pattern. The species is widespread in much of Europe.

Flight period: September–October (3 September–22 October) (December). An adult was also taken on 2 December.

Counties and 10km squares: Antrim, Armagh, Cavan, Clare, Cork, Derry, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Laois, Leitrim, Longford, Louth, Mayo, Meath, Monaghan, Roscommon, Sligo, Tipperary, Tyrone, Westmeath, Wexford, Wicklow (26/32). The species is known from ninety-six 10km squares (96/1019).

FIGURES 205-206. Known Irish and European distributions of *Anabolia nervosa*.



Published records

King and Halbert, 1910 (**ARMAGH:** Lowry's L. (H9144); Maghery (H9263) [L. Neagh]; near Armagh (H8745); Tynan (H7643). **DUBLIN:** Harold's Cross (O1431) [Poddle R.]; R. Tolka near Dublin (O1337). **LOUTH:** Castlebellingham (O0595) [R. Glyde]. **WICKLOW:** Roundwood (O1903)). *Kennedy and Fitzmaurice, 1968a* (**CORK:** Connolly's Stream (Glashagarriff R.) (W4175)). *Toner and O'Connell, 1971* (**CORK:** Fermoy (Blackwater R.) (W8098); Mitchelstown (R. Funcheon) (R8113)). *Fahy, 1972a* (**WEXFORD:** (T1759) [corrected from T1859]). *Moriarty, 1973a* (**ROSCOMMON:** L. Key (G8000) = [G8304]. **SLIGO:** L. Gill (G7030) = [G7232]). *Moriarty, 1973b* (**CAVAN:** Erne lakes (H3722); R. Erne, Belturbet (H3516)). *Moriarty, 1974* (**ROSCOMMON:** L. Key (G8304)). *O'Connor and Norton, 1977* (**WESTMEATH:** L. Coosan (N0544)). *McCarthy, 1977* (**MEATH:** Trimblestown R. (N7262)). *O'Connor and Norton, 1978* (**WESTMEATH:** Coosan Point, L. Ree (N0446)). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7007), (H6907), (H7106), (H6906). **WICKLOW:** L. Dan (O1502)). *O'Connor and Bracken, 1980b* (**MEATH:** R. Tolka (O0142), north of Dunboyne). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7192)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998*

(**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 26 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 30 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Donohue et al., 2009* (**IRELAND**). *Atalah et al., 2010* (**IRELAND**). *Anon., 2011* (**WEXFORD:** R. Slaney (S9830)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**CLARE:** L. Graney (R5690); L. Inchiquin (R2789). **LEITRIM:** Glencar L. (G7543); L. Tap (N0194). **MAYO:** Carrowkeribly [Ballycong L.] (G2611); L. Mask (M1060). **MONAGHAN:** Drumlona L. (H6317)). *O'Connor, Bond and O'Connor, 2013* (**FERMANAGH:** Upper L. Erne (H3524); R. Erne (H2637)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Kellswater (J1698); R. Braid (D1003); R. Bush (C9436); R. Clogh (D0613); R. Crumlin (J1976); R. Main (J0889), (D0513). **ARMAGH:** R. Cusher (J0350). **DERRY (LONDONDERRY):** R. Aghadowey (C8722). **DOWN:** R. Lagan (J2551); Upper Bann (J1345). **FERMANAGH:** R. Arney (H1737); R. Colebrooke (H3744); R. Finn (H4220); R. Glendurragh (H2265); R. Sillees (H2341). **TYRONE:** Ballynahatty Water (R. Owenreagh) (H4367); Eskragh Water (Quiggery Water) (H4763); Glashagh Burn (H6180); R. Ballinderry (H8376); R. Blackwater (H6253); R. Camowen (H4673); R. Cloghfin (H5170); R. Derg (H3184); R. Owenkillew (H6885); R. Owenreagh (H5882); R. Strule (H4186); Quiggery Water (H4467)). *Baars et al., 2014* (**IRELAND:** recorded in 1 of 12 upland peatland lakes). *Anon., 2015a* (**CLARE:** L. Bunny, (R3796). **FERMANAGH:** Colebrooke Estate (H4044). **GALWAY:** L. Corrib (M2926). **MAYO:** Cong (M1455). **ROSCOMMON:** L. Key Forest Park (G8404)).

Unpublished records and voucher specimens

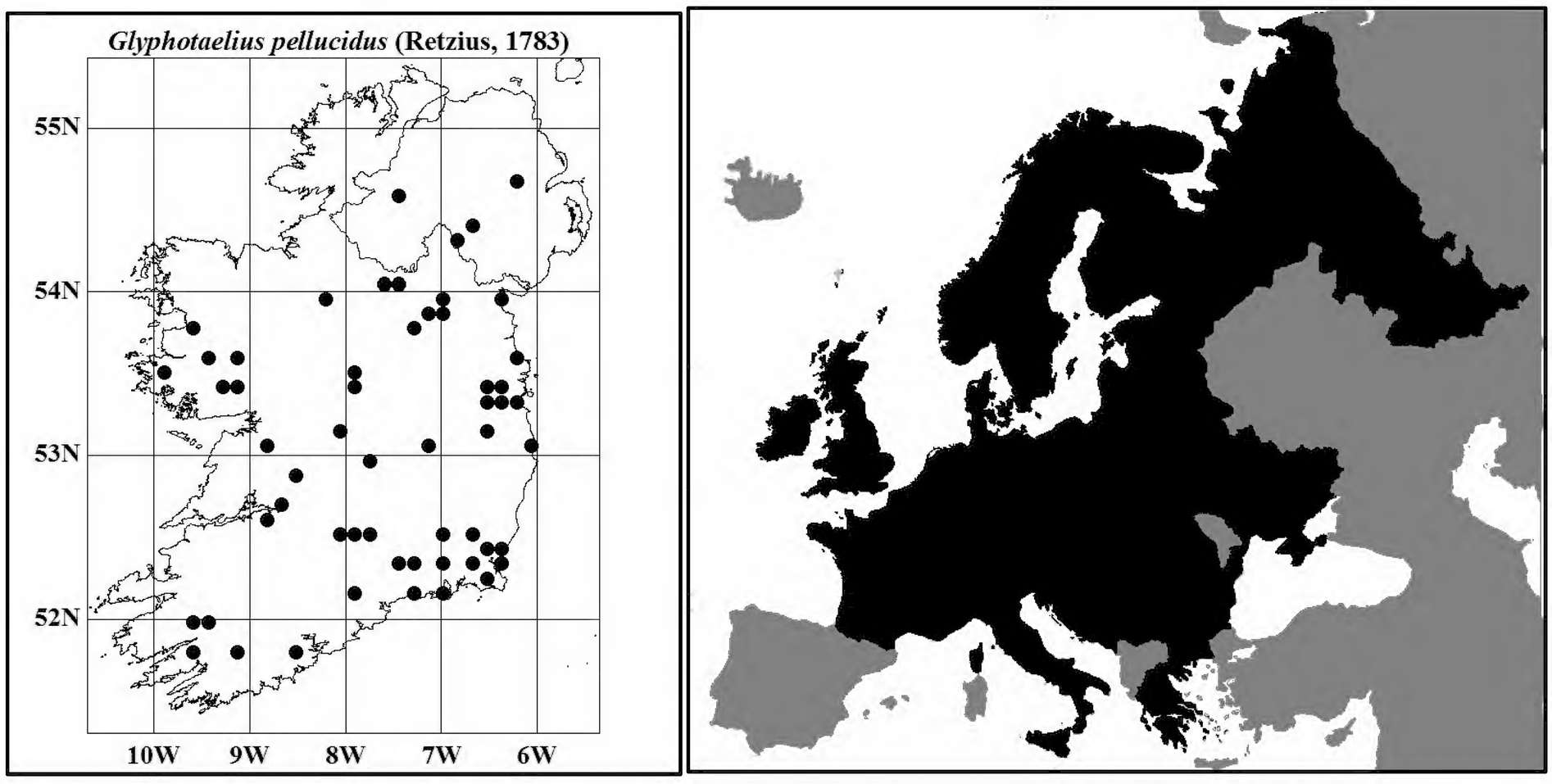
ARMAGH: Armagh (H8745), ♂ 11 September 1891, [WFJ] (HMAG); **L. Neagh** (H8342), Maghery, ♂ 12 September 1895, conf. JPOC (NMI); **Lowry's L.** (H9144), ♂2♀♀ 24 September 1894, 2♂♂ 16 September 1895, WFJ, conf. JPOC (NMI); **Tynan** (H7643), adults 22 September 1894, det. RMCL (BMNH). **CAVAN: L. Cuilcagh** (N6389), 18♂♂8♀♀ 2 October 1972, 7♂♂5♀♀ 27 September 1973, LT 5♂♂4♀♀ 26-27 September 1973, JPOC; **L. Inchin** (H3808), 10♂♂♀ 29 September 1973, JPOC; **L. Moneen** (G9828), 2♂♂4♀♀ 29 September 1973, LT 2♂♂4♀♀ 28-29 September 1973, JPOC; **L. Mullagh** (N6785), ♂♂♀♀ 4 October 1972 (NMI), 38♂♂22♀♀ 4 October 1972, 6♂♂4♀♀ 27 September 1973, 24 larvae exposed rocky shore, 55 larvae reed bed & 32 larvae sheltered rocky shore, 3 April 1973, JPOC; **L. Ramor** (N6087), larva 2 August 1973, JPOC, larva 1996/1997, JW, (N6186), 12♂♂2♀♀ 27 September 1973, JPOC, 6♂♂ 1 October 1989, 2♂♂ 22 October 1990, JPOC/MAOC, det. JPOC; **L. Sheelin**, adult 25 September 1966, JRH, IET ♀ 1 October 1971, IFT, det. JPOC, (N4182), LT 2♀♀ 22-23 September 1973, Crover, ♂♀ 12 September 1991, (N4686), 10♂♂2♀♀ 30 September 1973, JPOC, (N4384), Kilnahard Bay, larva 7 March 1975, KFW, det. JPOC; **L. Sillan** (H7007), light 51♂♂68♀♀ 30-31 September & 7♂♂4♀♀ 1 October 1972, LT 8♂♂7♀♀ 28-29

September 1972, (H6906), larvae 1971 (NMI), 8♂♂♀ 3 October 1972, 12 larvae exposed rocky shore, 11 larvae reed bed & 12 larvae sheltered rocky shore, 29 March 1973, JPOC; **Mount Nugent R.** [Inny R.] (N4986), 3 larvae 5 August 1973, JPOC; **Moyduff Lake** (H6909), Cootehill, adult 24 September 1962, JRH, 3♂♂2♀♀ 29 September 1973, JPOC; **R. Annalee** (H4511), 27♂♂2♀♀ 3 October 1972, LT ♀ 27-28 September 1973, (H7206), 4 larvae 1 August 1973, (H6808), 11♂♂5♀♀ 30 September 1972, (H6806), above L. Sillan, 4♂♂♀ 31 September 1972, (H7205), 4♂♂2♀♀ 27 September 1973, JPOC; **R. Barora** (N6893), 12♂♂6♀♀ 4 October 1972, 4♂♂2♀♀ 27 September 1973, JPOC; **R. Blackwater** (N6383), larva 2 August 1973, (N6283), exiting L. Ramor, 7♂♂4♀♀ 27 September 1973, JPOC; **R. Laragh** (H5106), ♂ 28 September 1973, JPOC. **CLARE: L. Cullaun** (R3290), larvae 1996/1997, JW; **L. Graney** (R5691), 2♂♂♀ 3 September 1973, JPOC; **L. Inchiquin** (R2789), 4 larvae 19 March 1973, JPOC; **R. Fergus**, adults September-October, MK, (R2888), Corofin, adults 20 September 1945 & 22 September 1946, JRH; **R. Shannon** (R6767), ♀ 3 September 1973, JPOC. **DUBLIN: Bohernabreena Lower Lake** (O0823), adult 4 October 1945, JRH; **Harold's Cross** (O1431) [Poddle R.], ♀, conf. JPOC (NMI); **R. Liffey** (O0335), Lucan, adult 29 September 1946, JRH; **Tolka R.** (O1337), ♂ 2 December 1894, conf. JPOC (NMI). **FERMANAGH: Crom Estate** (H3524), LT ♂ 24 September 2013, KGMB, det. JPOC; **R. Erne** (H2637), Cloonatrig, Bellanaleck, ♂ 9-10 October 2013, in spider's web, JPOC/MAOC, det. JPOC (NMI). **GALWAY: L. Ballyquirke** (M2331), larva 1996/1997, JW; **L. Corrib** (M1745), adults September-October 1964, MK, (M1146), Upper, ♀ 23 September 1980, BC, conf. JPOC (NMI); **R. Clare** (M4136), larva 22 August 1972, AFF, det. JPOC, (M4149), larva 3 September 1980, LW, conf. JPOC (NMI). **KERRY: Killarney Lakes**, trout stomachs, 2 larvae, UCD, det. JPOC; **R. Flesk** (V9689), ♂ 14 October 1973, JPOC. **KILDARE: Donadea Forest** (N8332), beside small lake, ♂ 14 September 1987, JPOC (NMI); **Newbridge (Pollardstown) Fen** (N7715), 2♂♂ 11 September 1985, ♂♂♀♀ 8 September 1991, JPOC; **R. Rye** (N9538), Carton, adult 6 October 1945, JRH. **LAOIS: R. Barrow** (N4709), ♀ pupa 8 September 1971, AFF, det. JPOC. **LEITRIM: Bonet R.** (G8534), larvae 24 June 1991, DAG/JML, det. JML; **L. Corry** (M9497), dredge 6 larvae 19 July 1972, AFF, det. JPOC. **LONGFORD: L. Ree** (M9963), 5 larvae 21 July 1972, AFF, det. JPOC; **Royal Canal** (N2360), Abbeysrule, larvae 21 June 1983, RM, det. BW (per IDW). **MAYO: Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults September-October 1964, MK; **Cong** (M1455) [L. Corrib], adult 28 September 1960, W. D. Hincks (MANM) (per IDW). **MEATH: L. Sheelin** (N4582), Gortport, 9♂♂6♀♀ 22 September 1973, JPOC; **Navan** (N8768) [R. Boyne], ♂ 22 September 1892, WFJ, conf. JPOC (NMI); **R. Athboy** (N7262), larvae 19 June 1983, RM, det. BW (per IDW); **R. Boyne** (N8868), 2♂♂ 1 October 1992, JPOC. **ROSCOMMON: L. Key** (G8205), 4 larvae 18 July 1972, AFF, det. JPOC; **R. Shannon** (N0339), larva 13 July 1972, AFF, det. JPOC. **SLIGO: L. Arrow** (G7711), adults September-October 1964, MK; **L. Gara North**

(G7101), larva 1996/1997, JW. **TIPPERARY: Brownstown R.** (S1665), larvae 6 July 1992, DAG/JML, det. JML; **Kilmastulla R.** (R8172), (R7169), larvae/adults 1976-1977, MAOC; **R. Drish** (S2163), larvae 6 July 1992, (S2063), larvae 6 July 1992, DAG/JML, det. JML; **R. Suir** (S1267), larvae 10 March & 22 May 1992, (S1258), 10 March 1992, DAG/JML, det. JML. **TYRONE: Ballinderry R.** (H6980), Dunnamore Walk, 4♂♂ 20 September 2014, JPOC/MAOC, det. JPOC, (H7579), Wellbrook Beeting Mill, 2♂♂♀ 20 September 2014, JPOC/MAOC, det. JPOC (NMI). **WESTMEATH: L. Ennell** (N4146), adult 28 September 1946, JRH; **L. Owel** (N4156), larvae 1996/1997, JW; **L. Sheever** (N4655), larvae 19 June 1983, RM (det. BW) (per IDW); **Twy L.** (N0943), larvae 24 June 1983, RM (det. BW) (per IDW). **WICKLOW: L. Dan** (O1502), 5 larvae reed bed, 27 April 1973, JPOC, larva 1996/1997, JW; **R. Avonmore** (T1593), ♂♀ 19 September 1973, JPOC; **R. Derry** (S9764), ♀ pupa 3♂♂ 20 September 1973, JPOC; **Roundwood** (O1903), ♂ 1 October 1909, conf. JPOC (NMI).

86. *Glyphotaelius pellucidus* (Retzius, 1783)

FIGURES 207-208. Known Irish and European distributions of *Glyphotaelius pellucidus*.



Glyphotaelius pellucidus is widely distributed in Ireland. The cased larvae occur in ditches, lakes, marshes, ponds, rivers and streams where deciduous leaves accumulate and on which they live. The water bodies may dry up during the summer. The case is straight usually with large circular pieces of dead leaf attached. These provide excellent camouflage amongst the dead leaves and immobile larvae can be difficult to spot. The adults lay eggs on the upper surface of leaves above the water body. Small larvae are either washed from the original egg mass by rain or they actively bite their way out to escape. If the young larvae fall on dry ground, remarkably, they can

undergo quiescence until water returns. This may last up to eight months (Waringer and Graf, 2011). The species is widespread in Europe.

Flight period: May–October (13 May–12 October). Barnard and Ross (2012) give the British flight period as May–June, August–October with a summer diapause. Irish adults have been taken on different dates in July.

Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Dublin, Galway, Kerry, Laois, Leitrim, Limerick, Louth, Mayo, Meath, Monaghan, Roscommon, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (23/32). The species is known from fifty-six 10km squares (56/1019).

Published records

Morton, 1887b (**MONAGHAN:** Glasslough (H7241)). *King, 1888a* (**ARMAGH:** Loughgall (H9051). **DUBLIN:** Lucan (O0335) [R. Liffey]. **MAYO:** Croft L., Westport (L9984). **MONAGHAN:** Glaslough (H7241). **WESTMEATH:** Waterston [Waterstown] (N1045)). *Morton, 1892b* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* (**ARMAGH:** Loughgall (H9051). **DUBLIN:** Lucan (O0335) [R. Liffey]. **LIMERICK:** [(R5757) [R. Shannon]]. **MAYO:** Croft L. (L9884); Westport (L9984). **MONAGHAN:** Glaslough (H7241). **WATERFORD:** near Cappoquin (X0999). **WESTMEATH:** Waterstown (N0946). **WEXFORD:** Johnstown Castle (T0216) [small lakes]). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Mosely, 1930* (**GALWAY:** Oughterard (M1343)). *Beirne, 1939* (**DUBLIN:** Seapoint (O2229)). *Beirne, 1941* (**DUBLIN:** Seapoint (O2229)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H6906), adults). *O'Connor and Bracken, 1980b* (**MEATH:** R. Tolka (N9844), 5km upstream of Dunboyne on a tributary). *O'Connor and Wise, 1984* (**KERRY:** Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 1 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Becerra Jurado et al., 2009* (**TIPPERARY:** ponds (S0540), (S1640). **WATERFORD:** ponds (S4623), (S5202). **WEXFORD:** pond (T0830)). *Gammell, 2011* (**WEXFORD:** R. Sow, Edenvale (T0427)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); Muckross Lake (V9485); R. Galey (R0139)).

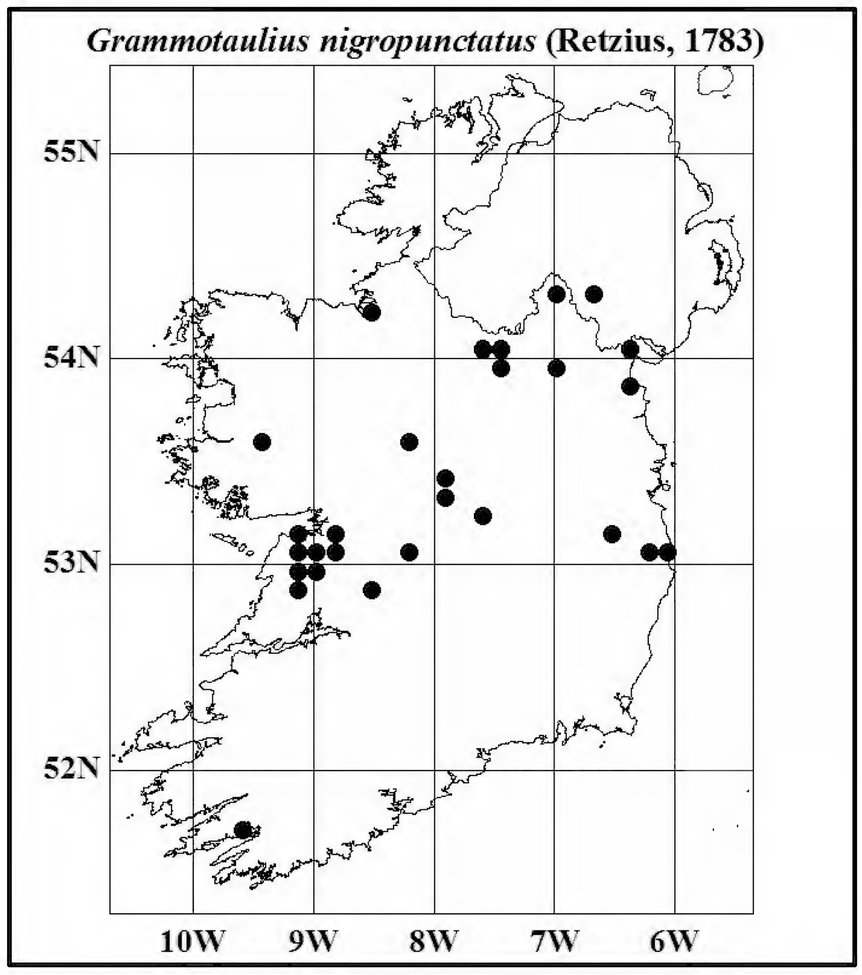
Unpublished records and voucher specimens

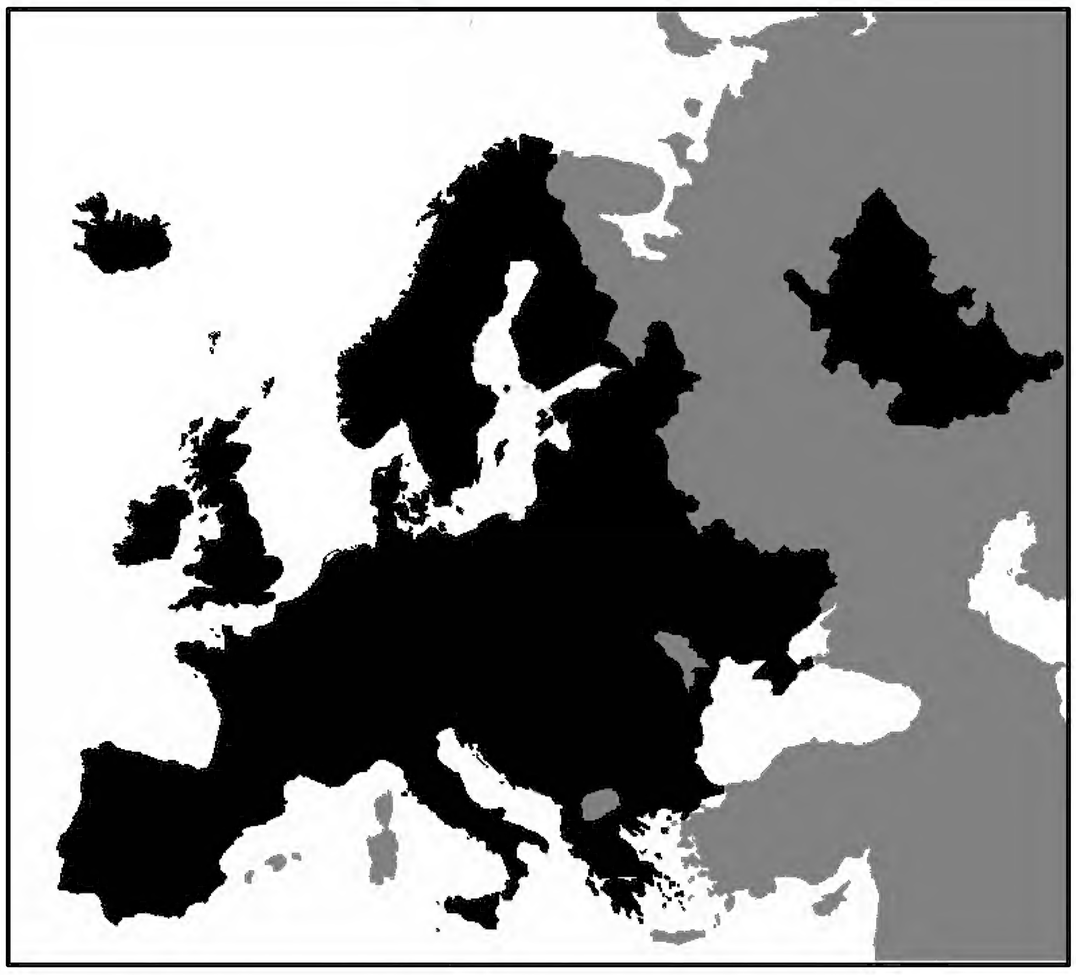
ANTRIM: Rea's Wood (J1485), MT ♂ 19 July 1985, MB, det. JPOC. **ARMAGH: Loughgall** (H9051), ♀ 21 July 1887, WFJ, conf. JPOC (NMI). **CARLOW: R. Barrow** (S7239), Bahana Woods, ♂ 21 August 1996, JPOC/MAOC. **CAVAN: L. Cuilcagh** (N6389), larva 29 March 1973, JPOC; **L. Oughter** (H3308), larva 1996/1997, JW; **L. Ramor** (N5987), ♀ 16 May 2001, JPOC; **L. Sheelin** (N4785), Mount Nugent, ♀ 1 August 1986, CM/OSF (SINMNH); **L. Sillan** (H6906), ♀ 11 August 1972, JPOC (NMI). **CLARE: L. Derg** (R6979), LT ♂ 2-3 September 1973,

JPOC. **CORK: Glengarriff** (V8959), ♂ 13 May 1966, ECPC (NMS); **L. Allua** (W1965), ♂ 16 August 1985, KGMB, det. JPOC. **DUBLIN**: **Castleknock** (O0837), at light, ♂ 3 September 1983, JPOC; **Dublin**, adult 1861, CGB (BMNH); **near Naul** (O1461), ♀ 18 May 1991, JPOC; **Phoenix Park** (O1036), Quarry Pond, ♀ 17 July 1972, JPOC (NMI); **R. Liffey** (O0835), Strawberry Beds, ♂ 31 May 1973, JPOC; **Seapoint** (O2229), adult 20 September 1938, BPB (BMNH). **GALWAY: Connemara National Park** (L7157), acidophilous woodland, MT ♂ 30 June-20 July 1994, MCDS, det. JPOC; **Coole Woods** (M4304), ♂ 1 June 1992, JPOC/MAOC, det. JPOC; **L. Corrib** (M2642), Keekill, LT 2♂♂ 2 August & ♂ 28 August 2003, KGMB, det. JPOC; **L. Mask** (M0957), Kilbeg Lower, LT ♂6♀♀ 16 August 2014, MG; **Oughterard** (M1343), adult 3-9 August 1926, MEM (BMNH). **KERRY: Blue Pool** (V9786), R. Cloghereen, ♀ 30 August 1987, JPOC; **Doolough** (V9585), LT ♂♂♀♀ 26 August 1987, JPOC/MAOC, det. JPOC; **Muckross Lake** (V9485), Colleen Bawn (Baun), LT ♂ 11-12 October 1972, (V9685), boat house, ♂ 24 August 1973, JPOC (NMI). **LAOIS: The Derries** (N5805), ♂ 20 September 1982, JPOC. **LEITRIM: Killegar Estate** (H2507), LT ♂♂♀♀ 16 August 1991, SW, det. JPOC (NMI). **LIMERICK: Curraghchase Forest Park** (R4148), LT ♂ 18 May 2015, KGMB, det. JPOC; **Limerick** (R5757) [R. Shannon], ♂, conf. JPOC (NMI). **LOUTH: Castlebillingham** (O0698), marshes, adult 27 May 1967, ECPC (per IDW). **MAYO: Cloghan's Hill** (M3058) [Black R.], adult 11 July 1972, LSG (MANM) (per IDW). **MONAGHAN: Glasslough** (H7241), ♂♂♀♀ 10 August 1887 & August 1892, Morton Coll. (BMNH, NMS). **ROSCOMMON: L. Key** (G8404), Rockingham, ♀ 11 August 2001, JPOC. **TIPPERARY: Marl Lake** (R9644), ♀ 23 August 2000, JPOC; **Monahincha Bog** (S1789), ♂ MVLT 18 June 1986, KGMB, det. JPOC (NMI); **Redwood Bog** (M9611), MVLT ♂ 19 June 1986, KGMB, det. JPOC (NMI). **TYRONE: Aghadulla** (H3767), Skinner trap ♀ 2 September 2014, KGMB, det. JPOC. **WATERFORD: Carrick on Suir** (S3621), streams near, ♂ 12 July 1989, JPOC; **Woodstown** (S6905), *Phragmites* bed, ♂ 2 July 1983, JPOC (NMI). **WESTMEATH: Coosan** (N0544), MVLT ♀ 31 May 1981, JS, det. JPOC (NMI). **WEXFORD: Browncastle** (S9122), holy well, ♀ 20 July 2015, JPOC/MAOC, det. JPOC; **Curracloe** (T1126), marsh, ♂ 27 July 2015, JPOC; **Killoughrim Forest** (S9041), stream, 2♀♀ 27 May & 2♀♀ 4 June 1987, JPOC; **Oaklands Wood** (S7125), beside small stream, ♀ 4 August 2005, JPOC. **WICKLOW: Murrough Marshes** (O2902), at light ♂♀ 13 May 1977, MDCW, det. JPOC (NMI); **Russelltown Park** (N9610), leaf-filled ditch (*Fagus*, some *Salix*), static but probably flows in floods, larvae (v instar) common, 10 March 1984, (N9611), stream feeding lake, upper section by old hedge of mature *Fagus* and *Quercus* in field, slow, muddy and weedy, larvae (v) 10 March 1984, IDW.

87. *Grammotaulius nigropunctatus* (Retzius, 1783)

FIGURES 209-210. Known Irish and European distributions of *Grammotaulius nigropunctatus*.





Grammotaulius nigropunctatus is a local Irish species. However, it is common in County Clare. In Ireland, the cased larvae have been found in a *Phragmites* fen at the Vartry Reservoir, County Wicklow, a site where adults have been commonly taken, and in a slow, muddy and weedy stream and in turloughs in County Galway. In Britain, Wallace (1991) has found the larvae in pools, ditches and lake margins, amongst the submerged parts of emergent vegetation such as reeds and grasses. These sites dry up or considerably diminish during summer. This may explain the species being common in County Clare as pools, ditches and turloughs on the Burren limestone would frequently dry up during the summer months. Similarly, the area around the Vartry Reservoir dries up in the summer. Searches for larvae in suitable habitat may greatly increase the known Irish distribution. The case is made of overlapped pieces of plant material and is often longer than the larva. The larvae are mainly shredders but also graze and predate. The species is widespread in Europe.

Flight period: May–October (2 May–1 October).

Counties and 10km squares: Armagh, Cavan, Clare, Cork, Galway, Leitrim, Louth, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Westmeath, Wicklow (14/32). The species is known from twenty-eight 10km squares (28/1019).

Published records

King, 1891 as *Grammotaulius atomarius* (**ARMAGH:** Armagh (H8745)). *King and Halbert, 1910* as *Grammotaulius atomarius* (**ARMAGH:** Mullinure (H8846). **LOUTH:** Castlebellingham (O0595) [R. Glyde]. **MONAGHAN:** Emyvale (H6843). **ROSCOMMON:** Mote Park (M8960). **SLIGO** [near Sligo (G7035)]. **WICKLOW:** Roundwood (O1903)). *Bracken and Murray, 1973* as *Grammotaulius atomarius* (**CORK:** L. Avaul (V9153)). *Fahy, 1974* as *Grammataulius atromatius* (unsafe larval determination). *Fahy, 1975* as *Grammataulius atromatius* (unsafe larval

determination). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* as *Grammotaulius atomarius* (**CAVAN:** L. Sillan (H6906), adults). *Dauod, Bolger and Bracken, 1986* as *Grammotaulius atomarius* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *O'Connor, 1987* (**IRELAND:** widespread). *Bracken and Dauod, 1990* as *Gramotaulius atomarius* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O Connor, Á. et al., 2004* (**GALWAY:** Caranavoodaun turlough (M4515); L. Coy (turlough) (M4907); Roo West (turlough) (M3802)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**).

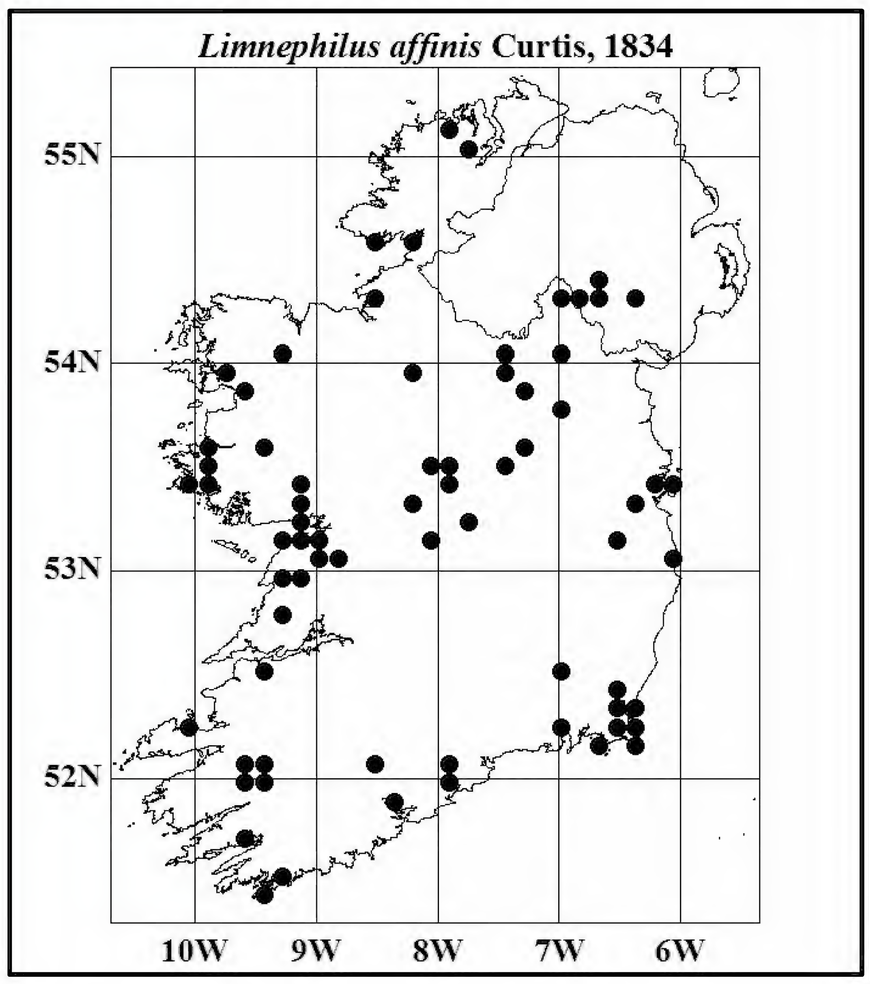
Unpublished records and voucher specimens

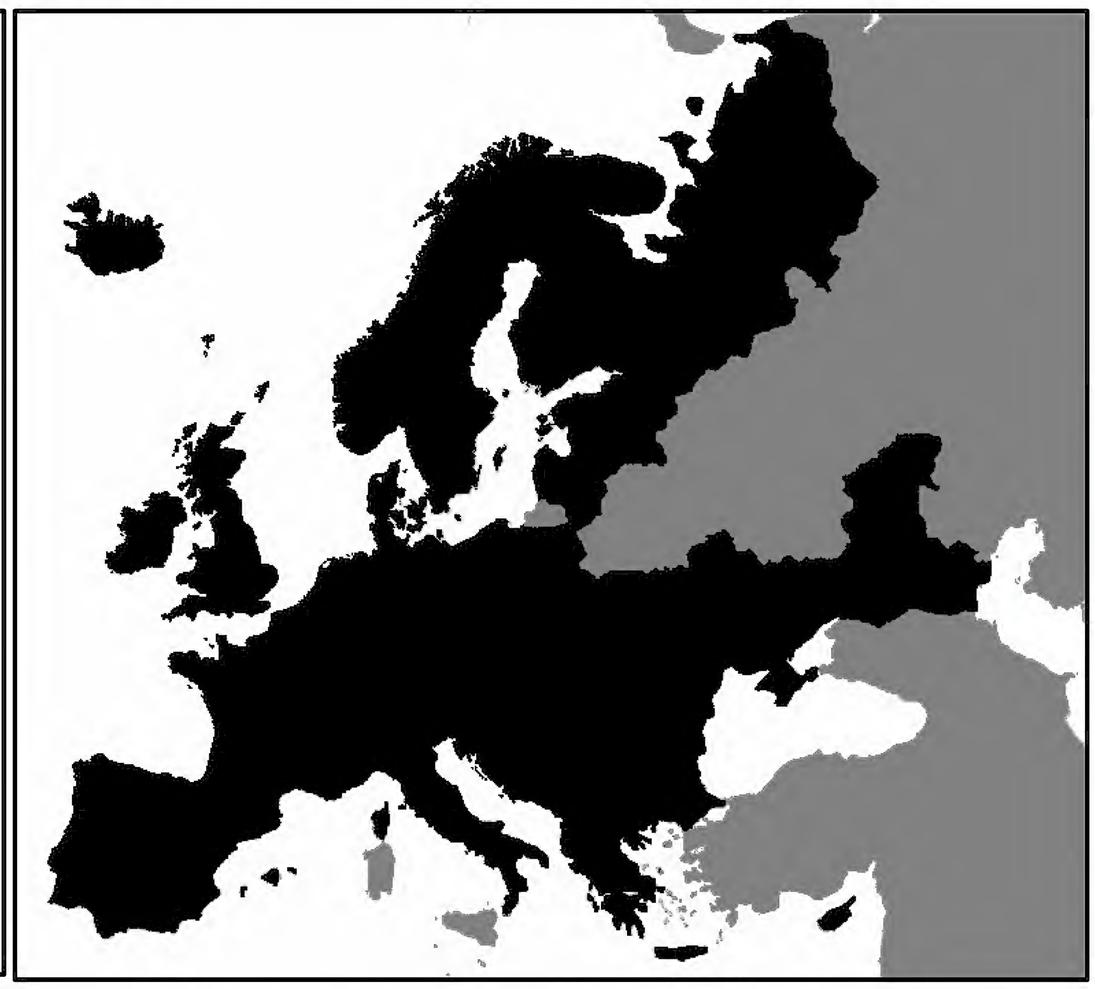
ARMAGH: Armagh (H8745), ♀ 1 June 1891, WFJ, conf. JPOC (NMI). **CAVAN: Corrakane L.** (H4000), small lake, ♀ 4 May 1979, JPOC; **L. Oughter** (H3308), ♂ 4 August 1973, JPOC (NMI); **L. Sillan** (H6906), ♂ 31 July 1973, LT 4♂♂2♀♀ 31 July-1 August 1973 (NMI), JPOC. **CLARE: Ballyeighter L.** (R3593), in woods, ♀ 29 May 1984, JPOC (NMI); **Ballyeighter Wood** (R3493), ♂♀ 23 June 1970, ECPC, conf. JPOC (NMS); **Ballyvaughan** (M2207), ♀ 9 September 1963, ECPC, conf. JPOC (NMS); **Carran** (R2899), ♀ 28 August 1987, KGMB, det. JPOC (NMI); **L. Bunny** (R3797), MVLT ♂ 3 August 1996, KGMB, det. JPOC; **L. Derg** (R6878), 2 ♂♂♀ LT 2-3 September 1973, JPOC (NMI); **near Ennis** (R2979), ♀ 30 May 1984, *Corylus* wood, JPOC; **Rinnamona L.** (R2892), at light, adult 9 September 1963, ECPC (per IDW). **CORK: L. Avaul** (V9153), adult 1969, MK. **GALWAY: Coole Woods** (M4304), ♂♀ 1 June 1992, JPOC/MAOC, det. JPOC; **Frenchpark** (M4114), ♂ 9 July 1996, KGMB; **L. Mask** (M0957), Kilbeg Lower, LT ♂ 16 August 2014, MG. **LEITRIM: Killegar Estate** (H2507), LT ♂♂♀♀ 16 August 1991, SW, det. JPOC (NMI). **LOUTH: Castle Bellingham** [Castlebellingham] (O0595), ♂, conf. JPOC (NMI); **Dundalk** (J0408), ♂ 28 August 1983, KGMB, conf. JPOC. **MONAGHAN**: **Emyvale** (H6843), ♂ 20-30 July [1885-6], conf. JPOC, Morton Coll. (NMS). **OFFALY: Mongan Bog** (N0330), LT ♂♀ 5 July 1983, JAG, det. JPOC; **Pallas Lake** (N2719), ♂ 2 May 1977, MFOG, det. JPOC. **SLIGO: Sligo** (G7035), ♂, WFJ, conf. JPOC (NMI). **TIPPERARY: Hayes Island** (M8604) [R. Shannon], Portumna, ♂♀ [25] June 1921, JNH, det. JPOC (NMI). **WESTMEATH: L. Coosan** (N0544), Creaghduff, LT ♀ 2 July 1980, JPOC (NMI), LT abundant ♂♂♀♀ 17 August 1980, JS, det. JPOC (NMI). **WICKLOW: Murrough Marshes** (O2902), LT ♀ 15 May 1977, MDCW, det. JPOC (NMI); **Roundwood** (O1903), ♂ 1 October 1909, [JNH], conf. JPOC (NMI); **Russelltown Park** (N9611), stream feeding lake, upper section by old hedge of mature *Fagus* and *Quercus* in field, slow, muddy and weedy, one larva (v), 10 March 1984, IDW; **Vartry Reservoir** (O1903), 5♂♂ 23 May 1974 (NMI), 13♂♂6♀♀ LT 19-20 August 1973, JPOC, in *Phragmites* fen, larvae (ii,

iii (numerous), iv, v), 11 March 1984, IDW, (O2004), Roundwood, LT 5♂♂5♀♀ 14 August 1983, HAD, conf. JPOC.

88. *Limnephilus affinis* Curtis, 1834

FIGURES 211-212. Known Irish and European distributions of *Limnephilus affinis*.





Limnephilus affinis is widely distributed in Ireland and a common species, frequently taken in light-traps far from water. The cased larvae occur in lakes, ponds, ditches, and pools in salt marshes. The habitats often dry up during summer. The larvae are very tolerant of saline conditions and have been found in such sites as the North Bull Island, County Dublin and Lady's Island Lake, County Wexford. They can tolerate levels of salinity by regulating the salt in their blood. Larvae can survive for long periods in 75% sea water. Indeed, in salt marsh pools, larvae can be periodically subjected to nearly full strength sea water for several days at a time (Sutcliffe, 1961, 1962). They are mainly shredders but are also grazers and predacious. *L. affinis* is one of the limnephilid species in which the adults emerge in the spring or summer with premature gonads and oversummer in cool areas. Only in the autumn, triggered by the shortened light period and intensity, do copulation and egg-laying take place (Hiley, 1978; Waringer and Graf, 2011). The species is widespread in Europe.

Flight period: April–October (24 April–14 October). The species has a summer diapause.

Counties and 10km squares: Armagh, Carlow, Cavan, Clare, Cork, Donegal, Dublin, Galway, Kerry, Mayo, Monaghan, Offaly, Roscommon, Sligo, Tyrone, Waterford, Westmeath, Wexford, Wicklow (19/32). The species is known from seventy 10km squares (70/1019).

Published records

Morton, 1886 as *Limnophilus* (**MONAGHAN:** Glasslough neighbourhood (H7241)).

King, 1888a as *Limnophilus* (**KERRY:** Boreen-a-morave (V9192) [misspelling for

Boreen na Marbh, Aghadoe]; Denough [Deenagh] R. (V9792); Ross Castle (V9488). **MAYO:** Ballin Laogh (L9987). **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan (N0446) [L. Ree]; Shannon (N0243)). *King, 1891* as *Limnophilus* (**ARMAGH:** Armagh neighbourhood (H8745)). *King and Halbert, 1910* as *Limnophilus* (**ARMAGH:** Lowry's L. (H9144), etc. **DONEGAL:** Coolmore (G8566); Largy R. (G6675); L. Keel (C1524); R. Lennan [Leannan] (C1521). **GALWAY:** Ballinaloe (M8531) [R. Suck]. **KERRY:** Boreen-a-Morave (V9192) [mispelling for Boreen na Marbh, Aghadoe]; Deenagh R. (V9792); Ross Castle (V9488). **MAYO:** Ballin L. (L9987). **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WATERFORD:** Dromana (X0994). **WESTMEATH:** Coosan (N0446) [L. Ree]; L. Ree (Hare Island) (N0446); R. Shannon (N0243). **WEXFORD:** Edenvale (T0427) [R. Sow]; Johnstown Castle (T0216) [small lakes]; R. Slaney near Killurin (S9726); Rosslare [Rosslare Strand] (T0718)). *Mosely, 1930* as *Limnophilus* (**GALWAY:** Cashel Bay (L7942)). *Bracken and Murray, 1973* (**CORK:** L. Avaul (V9153)). *Healy, 1975* (**DUBLIN:** North Bull Island [O2438]). *Speight and Healy, 1977* (**DUBLIN:** North Bull Island, salt marsh [O2438]). *Speight, 1977* as *Limnophilus* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan (N0446)]; Hare Island (N0446)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Healy, Bates and McGrath, 1982* (**WEXFORD:** Lady's Island Lake (T1006)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Speight, 1990* (**OFFALY:** All Saints, Bog (N0010)). *Healy, 1997* (**WEXFORD:** Lady's Island Lake (T1006), (T1007)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Gill (Q6113); R. Galey (R0139)).

Unpublished records and voucher specimens

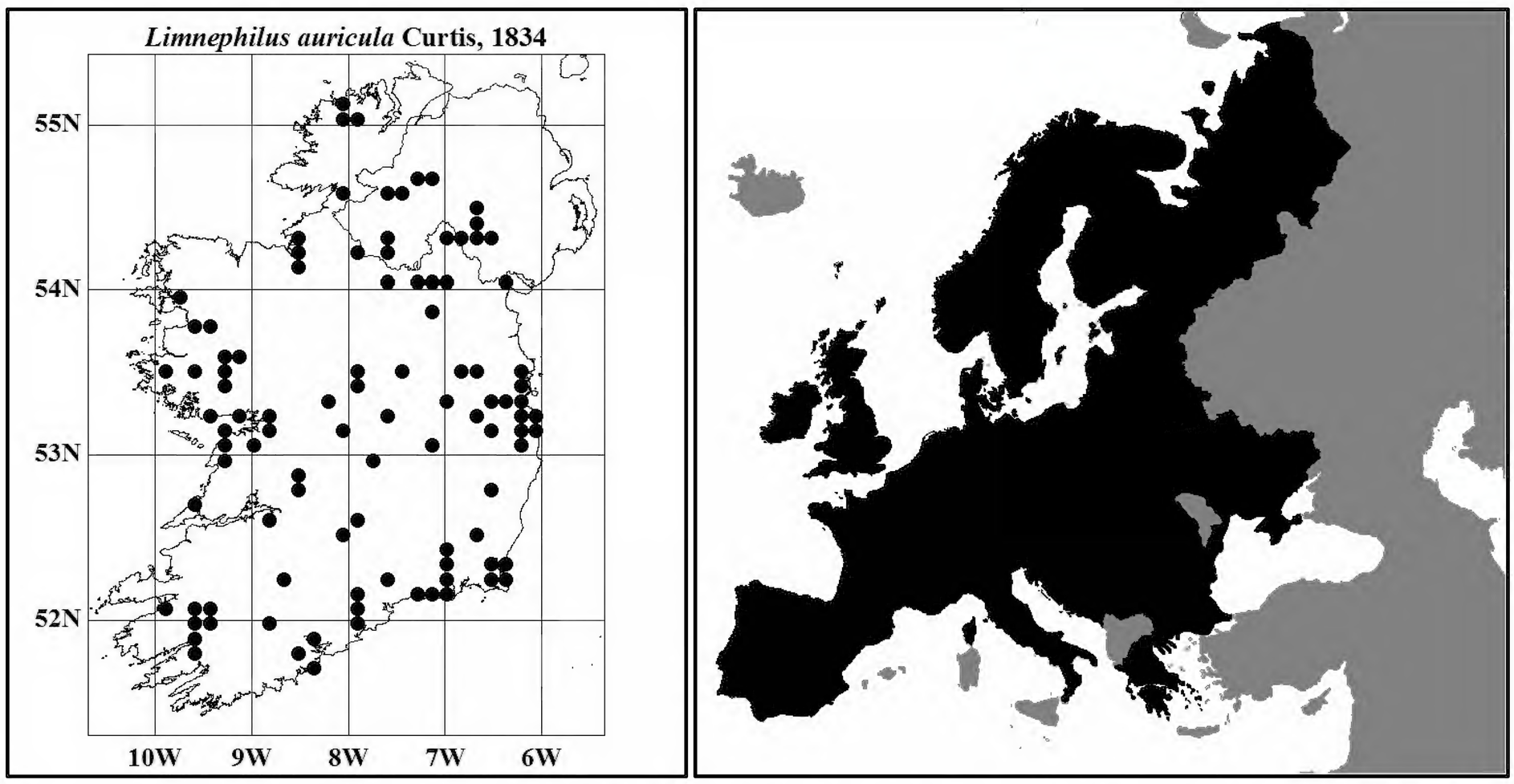
ARMAGH: Armagh (H8745), ♂ 4 September 1889, conf. JPOC (NMI); **Lowry's L.** (H9144), ♀ 24 September 1894, ♀ 16 September 1895, conf. JPOC (NMI); **Poyntzpass** (J0639) [R. Bann], ♂ 20 September 1909 (misidentified as *Limnephilus sparsus*), det. JPOC (NMI). **CARLOW: R. Barrow** (S7238), St Mullins, ♂ 9 August 1994, JPOC, ♂ 26 August 2012, JPOC, near lockhouse, in ivy overhanging marshes, 2♀♀ 22 July 2015, JPOC/MAOC, det. JPOC, (S7337), 2♀♀ 30 July 2015, JPOC; **St Mullins** (S7237), small river entering R. Barrow, ♂ 1 July 1991, JPOC/MAOC, det. JPOC. **CAVAN: Corrakane L.** (H4000), small lake, ♂ 1 May 1982, JPOC (NMI); **L. Inchin** (H3808), ♂♀ 29 September 1973, JPOC; **L. Mullagh** (N6785), 2♀♀ 27 September 1973, JPOC; **L. Sheelin** (N4686), ♂ 29 September 1973, JPOC, ♀ 11 May 1977, MFOG, det. JPOC; **L. Tacker** (H6908), 3♂♂ 1 September 1973, JPOC. **CLARE: L. Bunny** (R3796), Burren, ♂ 28 May 1984, JPOC/MAOC, det. JPOC (NMI); **L. Inchiquin** (R2789), LT 6♂♂♀ 31 August-1 September 1973, JPOC; **L.**

Luick (M2807), ♂2♀♀ 30 August 1973, JPOC; **pond** (M2408), Burren, 2♂♂ 30 August 1973, JPOC; **R. Caher** (M1608), Burren, LT ♀ 30-31 August 1973, JPOC; **R. Ennistymon** (Inagh R.) (R1288), 3♂♂ 10 July 1981, JPOC; **stream** (R1472), entering L. Doo, ♂ 29 August 1973, JPOC. **CORK: Ballinure** (W7270) [L. Mahon], MVLT ♂♀ 10 September 1985, KGMB, det. JPOC (NMI); **Douglas R.** (W7169), 2♂♂ 6 September 1989, MVT 7♂♂♀ 25 August 1989, KGMB, det. JPOC; **Douglas R. Estuary** (W7270), ♂ 13 August 1991, KGMB, det. JPOC; **Fota Wildlife Park** (W7871), Rothamstead Insect Trap ♂ 8-9 May & ♂ 6 September 1986, ♂♂♀ 14 September 1987, KGMB, det. JPOC; **L. Ine** (Hyne) (W0928), ♀ 5 July 1978, JMCH, det. JPOC (NMI); **Roaringwater Bay** (V9626), East Calf Island, UVLT ♂ 28 June 1981, SB, det. JPOC; **Sherkin Island** (W0024), Trabawn, UVLT ♀ 16 June 1983, SB, det. JPOC, (W0124), Kilmoon, UVLT ♀ 19 June 1983, SB, det. JPOC (NMI); **Toorgarriff** (W6991), MVLT ♀ 16 August 1980, KGMB, det. JPOC (NMI). **DONEGAL: Creslough** [Crees L.] (C0529), (Ards House), adult 23 May 1967, ECPC (per IDW). **DUBLIN: Bull Island** (O2438), ♀ 25 April 1982, drainage ditch, JPOC/MAOC, det. JPOC (NMI); **Phoenix Park** (O1036), Quarry Pond, 7♂♂ 14 June 1972, ♂♀ 31 May 1973, JPOC (NMI), ♂2♀♀ 31 July 1986, CM/OSF (SINMNH); **Sutton** (O2539), ♀ 4 October 1909 (misidentified as *Limnephilus sparsus*), [JNH], det. JPOC (NMI). **GALWAY: Barna** (M2322), in house, ♂ 27 August & ♂ 28 August 1979, DMG, det. JPOC (NMI); **Cashel Bay** (L7942), Connemara, adult 6-16 September 1929, MEM (BMNH); **Cloghballymore** (M3913) [streams], MVLT ♂ 14 August 1996, KGMB, det. JPOC; **Connemara National Park** (L7157), acidophilous woodland, MT ♀ 30 June-20 July 1994, MCDS, det. JPOC; **Coole Woods** (M4304), ♂ 1 June 1992, JPOC/MAOC, det. JPOC; **Galway City** (M2925), bridge over canal, ♂ 24 April 1978, DMG, det. JPOC (NMI); **Letterfrack** (L7158), lake near, ♂ July 1982, JPOC (NMI); **L. Corrib** (M2531), Hurney's Point [near Moycullen], ♂ 12 September, ♂♂ 16 September & 2♂♂2♀♀ 25 September 2003, KGMB, det. JPOC, (M2642), Keekill, 2♂♂♀ 2 August 2003, KGMB, det. JPOC, (M2241), Cloonmore, LT ♂ 24 May 2015, MG/CC, det. MG; **L. Cutra** (R4698), MVLT ♂ 30 August 1996, KGMB, det. JPOC; **L. Mask** (M0957), Kilbeg Lower, LT ♂ 16 August 2014, MG, (M0957), Cnoc Rois, Clonbur, woodland path, ♀ 9 May 2015, MG/CC, det. MG; **Roundstone Bog** (L6946), LT ♂♀ 14 August 2014, GM/CC, det. GM. **KERRY: L. Gill** (Q6114), 14♂♂6♀♀ 28 August 1973, JPOC; **L. Guitane** (W0385), ♀ 14 October 1973, JPOC; **L. Leane** (V9291), Golf Course, ♂2♀♀ 15 September 1981, JPOC, (V9488), Ross Castle, ♀ 13 October 1973, JPOC. **MAYO: L. Conn** (G1516), ♂2♀♀ 13 August 1981, HM, det. H. Malicky; **Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT ♂ 30 May-20 June 1997, MCDS, det. JPOC. **MONAGHAN: Emyvale** (H6843), ♂♂ 20-30 July [1885-6], ♀ September 1916, conf. JPOC, Morton Coll. (NMS); **Glaslough** (H7241), ♂♀ August 1930, KJM, conf. JPOC (NMS), ♀ 12 August 1973, JPOC. **OFFALY: R. Brosna area** (N1825), Pollagh Bridge, adult 5 September 1947, JRH. **ROSCOMMON: L. Key** (G8404),

Rockingham Estate, ♀ 11 August 2001, JPOC. **SLIGO: Rahaberna** (G6940), ♀ 8 August 1988, DCFC, det. JPOC. **TYRONE: Moy** (H8356), MT ♀ 10-16 June 1985, MB, det. JPOC. **WATERFORD: Tourig Estate** (X0880) [Tourig R.], ♂ 4 August 1995, KGMB. **WESTMEATH: All Saints Bog** (N0111), 3♂♂3♀♀ 23 May, ♂ 12 June & ♂2♀♀ 23 August 2008, MN, det. JPOC; **Athlone** (N0341) [R. Shannon], ♀ 14 July 1888, JJFXK, conf. JPOC (NMI); **L. Derravaragh** (N4662), 2♂♂♀ 18 August 1978, JPOC; **L. Ennell** (N4146), adult 28 September 1946, JRH, adult June 1964, MK, (N3947), reed bed, ♂ pupa 15 May 1973, 2♂♂2♀♀ 31 May 1983, JPOC. **WEXFORD: Ballyteige** (S9405), sand-dunes, ♀ 12 August 1994, JPOC; **Duncannon** (S7308), at light ♂ 9 June 1982, JPOC; **Lady's Island Lake** (T1007), 6♂♂3♀♀ 28 August 1980, ♂♀ 24 May 1984, JPOC; **near Wexford Town** (T0519), pond, ♀ 21 September 1980, JPOC; **near Whitestown** (T0517), stream, ♂ 2 July 2014, JPOC/MAOC, det. JPOC; **Stoneyford** (T1009), stream, ♂♂♀♀ to light, 28 May-10 June 1978, JPOC (NMI); **Wexford** [Edenvale (T0427)], ♂ 27 June & ♀ 28 June 1902, JJFXK (both misidentified as *Limnephilus sparsus*), det. JPOC (NMI). **WICKLOW: Murrough Marshes** (O2902), Newcastle, gas light ♀ 15 May 1977, MDCW, det. JPOC (NMI); **Polluphucha (Blessington) Reservoir** (N9914), 3♂♂ 18 August 1973, JPOC (NMI).

89. *Limnephilus auricula* Curtis, 1834

FIGURES 213-214. Known Irish and European distributions of *Limnephilus auricula*.



Limnephilus auricula is a widely distributed and very common species in Ireland. The cased larvae occur in streams, turloughs, marshes, pools and ditches which dry up or considerably diminish during summer. They are mainly shredders but also graze and predate. Their cases are made with butted and overlapped plant pieces. The species is widespread in Europe.

Flight period: April–October (17 April–12 October). There is a summer diapause.
Counties and 10km squares: Armagh, Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Laois, Leitrim, Limerick, Louth, Mayo, Meath, Monaghan, Offaly, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (25/32). The species is known from 100 10km squares (100/1019).

Published records

King, 1888a as *Limnophilus* (**ARMAGH:** Armagh (H8745). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); near Ma'am (L9653); Salthill (M2924). **KERRY:** Ardagh Laogh (V9888); Boreen-a-morave (V9192) [misspelling for Boreen na Marbh, Aghadoe]; Cloghereen (V9787); Denough [Deenagh] R. (V9792); Dinish (V9385); Ross Castle (V9488); The Glen in Deer Park (V9792); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084); Cogaula (M0486), Kip (M0880) and Mount Brown [Kinlooey] (M0381) Laoghs. **SLIGO:** Mackree [Markree] Castle (G6925); near Sligo (G7035). **WESTMEATH:** Athlone (N0341); Ballykerron [Ballykeeran] (N0744); Killinure (N0745); Shannon Side (N0243); Twy Laogh (N1043); Waterston [Waterstown] (N1045); Wineport (N0746) [L. Ree]. **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Morton, 1892b* as *Limnophilus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *Johnson, 1894* as *Limnophilus* (**ARMAGH:** Loughgilly (H9937)). *McLachlan, 1903* as *Limnophilus* (**KERRY:** Killarney). *King and Halbert, 1910* as *Limnophilus* (**ARMAGH:** Churchill (H8960) [near R. Blackwater]; L. Gall [Loughgall] (H9051); L. Gilly [lake near Loughgilly] (H9937), etc. **DONEGAL:** Coxtown (G9271). **DUBLIN:** Donabate (O2351). **GALWAY:** Ballinasloe (M8530) [R. Suck]; Castlekirk [Castle Kirk, L. Corrib] (M1244); Cong (M1455) [L. Corrib]; Maam (L9653); Salthill (M2924). **KERRY:** Killarney district. **LOUTH:** Dundalk (J0507). **MAYO:** Carrowbeg R. (M0084); Cogaula (M0486), Kip (M0880) and Mount Brown [Kinlooey] (M0381) Loughs. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **SLIGO:** Markree Castle (G6925) [Unshin R.]. **WATERFORD:** Dromana (X0994); near Cappoquin (X0999). **WESTMEATH:** Athlone (N0341) district. **WEXFORD:** Johnstown Castle (T0216) [small lakes]; Rosslare [Rosslare Strand] (T0718). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]; L. Dan (O1502)). *Halbert, 1912* as *Limnophilus* (**MAYO:** Westport (L9984)). *Mosely, 1927* as *Limnophilus* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Limnophilus* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Limnophilus* (**GALWAY:** Inverin (M0822)). *Beirne, 1939* as *Limnophilus* (**DUBLIN:** Seapoint (O2229). **KERRY:** Killarney, Upper Lake and Cahirnane [Cahernane, R. Flesk] (V9689)). *Beirne, 1941* as *Limnophilus* (**DUBLIN:** Seapoint (O2229)). *O'Connor and Norton, 1977* (**WESTMEATH:** Hare Island, L. Ree (N0446); L. Coosan (N0544)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**WICKLOW:** L. Dan (O1502), adults). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Upper Lake [Killarney]). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**).

Speight, 1990 (**OFFALY:** All Saints, Bog (N0010)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O Connor, Á. et al., 2004* (**GALWAY:** Caranavoodaun turlough (M4515); L. Coy (turlough) (M4907)). *Porst and Irvine, 2009a* (**GALWAY:** Caranavoodaun turlough (M4515). **MAYO:** Kilglassan turlough (M2764)). *Porst and Irvine, 2009b* (**GALWAY:** Blackrock turlough (M5008)). *Porst et al., 2012* (**GALWAY:** turloughs). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** L. Leane (V9686)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Upper L. Erne (H2731)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Mill L. (H2438); Upper L. Erne (H2339), (H2637)).

Unpublished records and voucher specimens

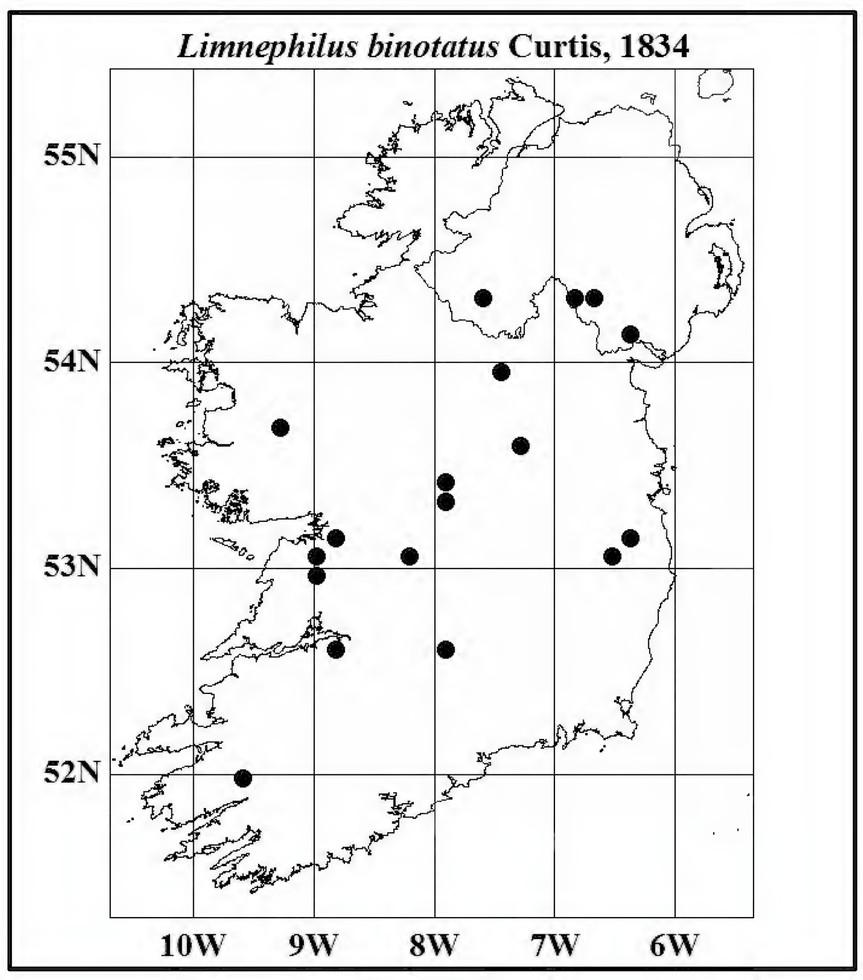
ARMAGH: Armagh (H8745), ♀ 25 May 1889, ♂ 30 May 1891, ♂ no date, WFJ, conf. JPOC (NMI). **CAVAN: L. Ramor** (N5987), Virginia Woods [Deerpark], ♂ 15 May 1989, JPOC, ♂ 24 May 1967, ECPC (NMS); **Moyduff Lake** (H6909), 2♀♀ 20 May 1973, JPOC; **R. Annalee** (H4511), LTS ♂ 21-22 June & ♂ 27-28 September 1973, JPOC; **R. Laragh** (H5210), LT 2♂♂♀ 2-3 August 1973, JPOC; **R. Owenmore** (H0626), ♂ 3 August 1973, JPOC. **CLARE: Ballynalachan** [Ballynalacken] **Castle** (M1000), at light, adults 7 September 1963 & 7 June 1964, ECPC (per IDW); **Kilkee** (Q8861), 2♂♂ 2 August 1987, JPOC; **Kilshanny** (R1293) [Aughyvackeen R.], hedgerows, ♀ 3 June 1992, JPOC; **Lisdoonvarna** (M1000), ♀ 6 July 1964, ECPC (NMS), Aille R. (R1397), 2♀♀ 8 July 1981, ♂ 25 May 1992, JPOC; **L. Bunny** (R3796), ♂ 21 May 1985, JPOC/MAOC, det. JPOC; **L. Derg** (R6979), LT ♂2♀♀ 2-3 September 1973, (R6878), ♀ 2-3 September 1973, JPOC (NMI); **pond** (R6566), ♂♀ 2 September 1973, JPOC; **R. Caher** (M1608), Burren, LT 4♂♂ 30-31 August 1973, JPOC; **R. Ennistymon** (Inagh R.) (R1288), ♂ 10 July 1981, JPOC. **CORK: Buttevant** (R5408) [R. Awbeg], MVLT ♀ 17 August 1995, KGMB; **Douglas R.** (W7169), MVT ♂ 25 August 1989, KGMB, det. JPOC; **Fota Wildlife Park** (W7871), ♂ 4 October 1986, ♀ 8 May 1987, KGMB, det. JPOC; **Glengarriff** (V8959), ♀ 13 May 1966, ECPC (NMS); **Inch** (X0280) (Tourig R.), ♂ 11 May 1985, KGMB, det. JPOC; **Nohaval Cove** (W7351), coastal cliff, ♂ 27 August 1987, KGMB, det. JPOC; **Riverstick** (W6659), MVLT ♂ 12 October 1984, KGMB. **DONEGAL: Coxtown** (G9271), ♀ July 1894, [WFJ], conf. JPOC (NMI); **Glenveagh National Park** (C0423), ♂ 4 August & ♂ 6 August 1982, COK, det. JPOC, (C0018), near Owenacoo R., MT ♂ 20-30 May 1998, MCDS, det. JPOC, (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT ♀ 10-30 July 1998, MCDS, det. JPOC; **Ray R.** (B9530), Falcarragh, ♂ 21 August 1987, TMN, det. JPOC (NMI). **DUBLIN: Donabate** (O2351), 2♀♀ October 1894, JNH, conf. JPOC (NMI); **Kilbarrack** (O2338), ♂ 24 May 1924, E. O'Mahony, det. JPOC (NMI); **Malahide** (O2344), Wheatfield, ♂ 26 May 1974, KGMB, det. JPOC; **Phoenix Park** (O1036), Quarry Pond, ♂ 31 July 1986, CM/OSF (SINMNH), on Chesterfield Avenue, ♀ 27

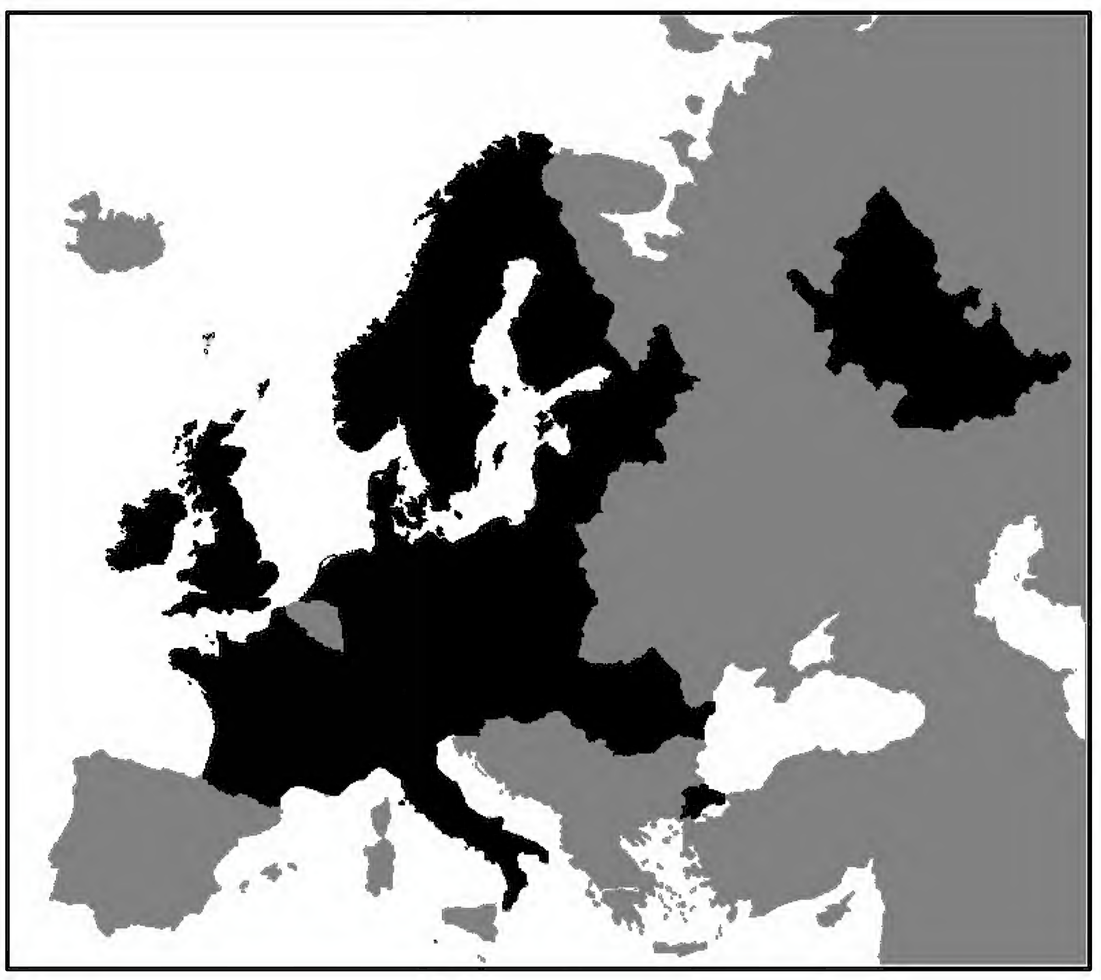
September 2013, JPOC. **FERMANAGH: Upper L. Erne** (H2339), Bellanaleck, 2♂♂ 14 May 2015, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Cong** (M1455) [L. Corrib], adult 24 July 1894, [JJFXK], det. FCJF (HMAG); **Connemara National Park** (L7157), at light ♀ 17 September 1982, NK, det. JPOC (NMI), acidophilous woodland, MT 2♂♂♀ 30 June-20 July 1994, MCDS, det. JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 28 March 1984, PB, det. JPOC; **Inverin** (M0822), adults 17 July-2 August 1926 & 26 August-6 September 1929, MEM (BMNH). **KERRY: Kenmare** (V9471), ♀ 29 May 1961, ECPC (NMS); **Killarney**, ♂ 5 July & ♂ 12 July 1887, JJFXK, conf. JPOC (NMI), adult July 1940, BPB, det. JRH; **L. Caragh** (V7392), ♂ 5 July 1973, JPOC; **L. Leane** (V9188), beside O'Sullivan's Cascade, 4♂♂2♀♀ 17 April 1973, JPOC (NMI); **Muckross** (V9786), adult, det. JPOC (NMI); **R. Flesk** (V9689), ♀ April 1950, EFB, det. JPOC (NMI); **R. Laune** (V8892), Beaufort Bridge, ♂ 28 May 1995, JPOC; **stream** (V9385), at Dinish, ♂ 31 May 1995, JPOC. **KILDARE: Carbury** (N7034), ♂ 19 July 1973, KGMB, det. JPOC; **Louisa Bridge** (N9936), marsh, larvae 12 March 1984, IDW; **Straffan** (N9326), fen/canal, ♀ 28 May 1982, JPOC. **LAOIS: The Derries** (N5805), ♀ 20 September 1982, JPOC, 3♂♂♀ 11 June 1983, JPOC/MAOC, det. JPOC (NMI). **LEITRIM: Killegar Estate** (H2507), LT ♂ 16 August 1991, SW, det. JPOC. **LIMERICK: Curraghchase Forest Park** (R4148), LT 2♂♂ 18 May 2015, KGMB, det. JPOC. **MAYO: Cloghan's Hill** (M3058) [Black R.], adult, LSG (MANM) (per IDW); **Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT ♂♀ 30 May-20 June 1997, MCDS, det. JPOC; **Robe R.** (M1964), Ballinasloe, ♂ 19 May 1973, JPOC; **Westport** (L9984), ♂♀, JJFXK, conf. JPOC (NMI). **MEATH: Batterjohn Big** (N8953), old quarry with pools, ♀ 31 May 1989, JPOC; **Rathmoylan Esker** (N7949), ♂ 23 July 1992, SW, det. JPOC. **MONAGHAN: Emyvale** (H6843), ♂♂♀♀ 20-30 July [1885-6], Morton Coll. (NMS); **Glasslough** (H7241), ♂ August 1892, KJM (NMS). **OFFALY: Clorhane** (M9827), ♂ 19 September 1996, KGMB, det. JPOC; **Pallas Lake** (N2719), May, MK. **SLIGO: Markree Castle** (G6925) [Unshin R.], ♂ 8 July 1982, JPOC; **Rahaberna** (G6940), 2♂♂ 30 August 1988, DCFC, det. JPOC. **TIPPERARY: Cabragh Bog** (S1054), ♀ 28 June 1994, KGMB; **Marl Lake** (R9644), ♂ 23 August 2000, MAOC, det. JPOC; **Monahincha Bog** (S1789), MVLT ♂ 18 June 1986, KGMB, det. JPOC (NMI). **TYRONE: Aghaboy** (H5581), LT ♂ 14 June 2014, KGMB, det. JPOC; **Aghadulla** (H3767), Skinner trap ♂ 2 September 2014, KGMB, det. JPOC; **Moy** (H8356), MT ♂ 10-16 June 1985, MB, det. JPOC (NMI); **Sloughan Glen** (H2774), LT 2♀♀ 2 September 2014, KGMB, det. JPOC; **Ulster-American Folk Museum** (H4379), near Strule R., LT ♂ 3 September 2014, VA, det. JPOC. **WATERFORD: Ballin L.** (S4503), near Kill, ♂ 23 May 1997, JPOC; **Ballymacaw Cove** (X6499), ♂ 6 July 1984, JPOC/MAOC, det. JPOC; **Fennor Bog** (S5301), ♂ 8 July 2014, JPOC; **Mahon Falls** (S3009), 2♀♀ 3 July 1988, JPOC; **near Passage East** (S6811), ♂ 29 June 1984, JPOC; **Woodstown** (S6905), ♂ 2 July 1983, *Phragmites* bed, JPOC (NMI). **WESTMEATH: All Saints Bog** (N0111), ♀ 23

May 2008, MN, det. JPOC; **Athlone** (N0341) [R. Shannon], ♂♂ 26 July 1888, JJFXK (NMS, HMAG); **Coosan** (N0544), Creaghduff, MVLT ♂♂♀♀ 31 May 1981, JS, det. JPOC (NMI); **L. Ennell** (N4146), adult May 1964, MK. **WEXFORD: Irish National Heritage Park** (T0022), near Ferrycarrig Castle, marsh/*Betula*, ♀ 2 June 1986, JPOC; **Lady's Island Lake** (T1007), ♀ 24 May 1984, JPOC; **Mount Garrett** (S7230) [R. Barrow], ♂ 17 June 1982, JPOC/MAOC, det. JPOC; **near Ballyhighland Wood** (S8840), small river, ♂ 14 June 1982, JPOC/MAOC, det. JPOC; **New Ross** (S7228), ♂ 7 July 2013, swept from vegetation in public park, JPOC; **Oaklands Wood** (S7125), ♂♀ 29 May 1987, JPOC; **Wexford** (T0718), ♀ (misidentified as *Limnephilus centralis* by KJM), det. JPOC, Wexford [Johnstown Castle (T0216)], ♂ 26 June & ♂ 30 August 1902, JJFXK, conf. JPOC (NMI). **WICKLOW: Calary Lower** (O2312), ♀ 23 September 1989, JPOC/MAOC, det. JPOC; **Coolattin Wood** (T0169) [R. Derry], ♀ 14 September 1984, JPOC; **Kilmacanogue** (O2513), marsh flowing by main stream, with litter of *Salix*, *Alnus* etc., marsh marigold, *Iris* etc. emergent, larva (v), 11 March 1984, IDW; **L. Dan** (O1502), ♂ 30 September 1909, [JNH], conf. JPOC (NMI), ♂♀ 19 August 1973, ♀ 23 May 1974, LT ♂ 21-22 June 1972, all JPOC; **R. Annamoe** (T1799), 2♀♀ 19 August 1973, JPOC; **R. Bray** (O2518), ♀ 14 August 1972, JPOC; **R. Glencullen** (O1919), LT ♂ 18-19 August 1973, JPOC; **Russelltown Park** (N9611), stream feeding lake, upper section by old hedge of mature *Fagus* and *Quercus* in field, slow, muddy and weedy, larvae (v) common, 10 March 1984, IDW; **Vallymount** (N9807), marsh, larvae 10 March 1978, JPOC, det. IDW (NMI); **Vartry Reservoir** (O1903), LT ♂♀ 19-20 August 1972, JPOC, (O2004), Roundwood, LT 2♂♂2♀♀ 14 August 1983, HAD, conf. JPOC.

90. *Limnephilus binotatus* Curtis, 1834

FIGURES 215-216. Known Irish and European distributions of *Limnephilus binotatus*.





Although *Limnephilus binotatus* was first reported in Ireland over 150 years ago, there are still few records perhaps due to the short flight-period. However, the species is widely distributed and adults have been observed to emerge in large numbers at Lough Carra, County Mayo. The cased larvae occur in turloughs, the reed beds of lakes and hollows in bogs where they are mainly shredders. The case is straight and composed of butted and overlapped plant material. The species is widespread in much of Europe.

Flight period: May–July (1 May–7 July) (August). Adults have been taken in August but no date was given. There is a short diapause.

Counties and 10km squares: Armagh, Cavan, Clare, Fermanagh, Galway, Kerry, Limerick, Mayo, Monaghan, Offaly, Tipperary, Westmeath, Wicklow (13/32). The species is known from eighteen 10km squares (18/1019).

Published records

McLachlan, 1861 as *Limnophilus borealis* (Zetterstedt, 1840) [misidentification] (**FERMANAGH:** near Enniskillen (H2344)). *McLachlan, 1862* as *Limnephilus borealis* (**FERMANAGH:** near Enniskillen (H2344)) [misidentification]. *McLachlan, 1864* as *Limnephilus borealis* [misidentification] (**[KERRY]:** Killarney). *McLachlan, 1874-1884* as *Limnophilus xanthodes* (**IRELAND**). *King, 1888a* as *Limnophilus xanthodes* (**FERMANAGH:** Enniskillen (H2344). **KERRY:** Killarney). *Morton, 1892b* as *Limnophilus xanthodes* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* as *Limnophilus xanthodes* (**ARMAGH:** Camlough (J0325); Lowry's L. (H9144). **FERMANAGH:** near Enniskillen (H2344). **KERRY**. **MONAGHAN:** Glaslough (H7241)). *Kidd, 1963* as *Limnephilus xanthodes* (**KERRY:** Killarney. **MONAGHAN:** Glasslough (H7241)). *Hickin, 1967* (**[KERRY]:** Killarney. **MONAGHAN**). *O'Connor, 1978a* (**IRELAND:** rediscovered); *O'Connor, 1978b* (**MAYO:** L. Carra (M1668)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**IRELAND:** widespread but few records). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O Connor, Á. et al., 2004* (**GALWAY:** Caranavoodaun turlough (M4515); L. Coy (turlough) (M4907); Roo West (turlough) (M3802)). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *Atalah et al., 2010* (**IRELAND**). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), hollows. **WICKLOW:** Kippure Bog (O1412), hollows). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Anon., 2015a* (**CLARE:** L. Bunny (R3695). **WICKLOW:** Wicklow Mountains National Park (O0101)).

Unpublished records and voucher specimens

CAVAN: Corrakane L. (H4000), small lake, ♀ 1 May 1982, JPOC/IDW, det. JPOC (NMI). **CLARE: Balleighter** (R3493), ♂♂ 25 May 1971, ECPC, conf. JPOC (NMS). **KERRY: Killarney (**V9685), paratype of *Limnephilus xanthodes* McLachlan, E. Birchall (BMNH). **LIMERICK: Curraghchase Forest Park** (R4148), Skinner trap

♂ 23 May 2015, KGMB, det. JPOC (NMI). **MAYO: L. Carra** (M1668), near Keel Bridge, ♂ 21 May 1977, JPOC (NMI). **MONAGHAN: Glasslough** (H7241), ♀♀ August 1892, conf. JPOC, Morton Coll. (NMS). **OFFALY: Finlough** (N0329), ♀ 7 July 1987, BMOH, det. JPOC. **TIPPERARY: Cabragh Bog** (S1054), MVLT 2♂♂♀ 28 June 1994, KGMB, det. JPOC; **Hayes Island** (M8604) [R. Shannon], Portumna, ♀ June 1921, JNH, det. JPOC (NMI). **WESTMEATH: Coosan** (N0544), MVLT abundant ♂♂♀♀ 31 May 1981, JS, det. JPOC (NMI).

[*Limnephilus bipunctatus* Curtis, 1834

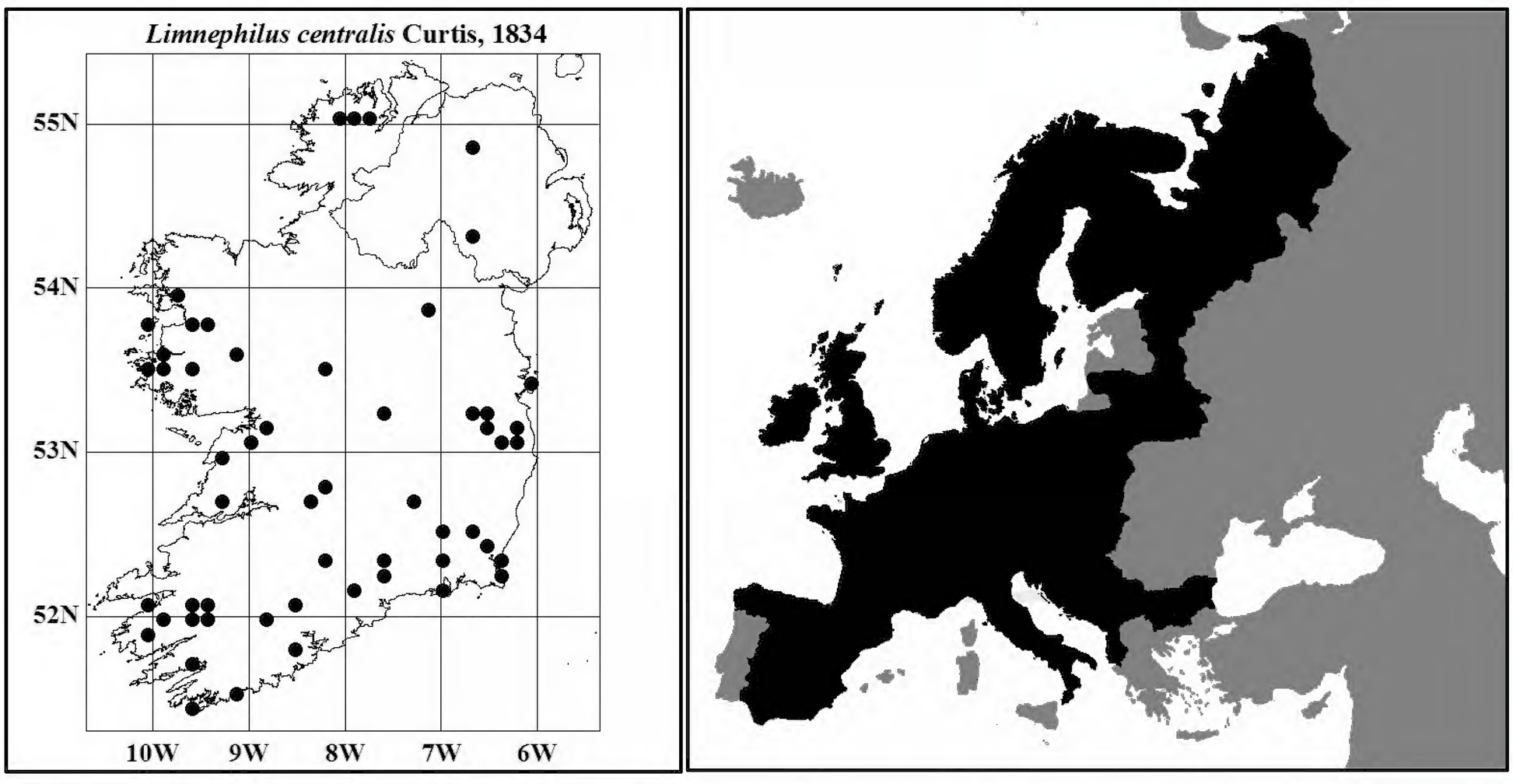
Callanan, Baars and Kelly-Quinn (2014) recorded larvae of *Limnephilus bipunctatus* from the River Bilbao, County Tipperary. No voucher material has been made available for examination despite a request made to the senior author *via* a co-author Dr Kelly-Quinn on 16 December 2014. This record requires confirmation with adults as the larvae of both *L. bipunctatus* and *L. centralis* are very similar and in certain instars only separated by head width (Wallace, Wallace and Philipson, 2003). The latter species was taken in two nearby rivers during the same study. In Britain, *L. bipunctatus* is local and appears to be a species of immature habitats (Wallace, 1991).

Published record

Callanan, Baars and Kelly-Quinn, 2014 (larval identification).]

91. *Limnephilus centralis* Curtis, 1834

FIGURES 217-218. Known Irish and European distributions of *Limnephilus centralis*.



Limnephilus centralis is widely distributed in Ireland. Being mainly shredders, the cased larvae occur in water bodies which dry up or considerably diminish during the summer. These include small streams, ditches, puddles, pools, ponds and turloughs. They can even be found in footprints. The species is widespread in Europe.

Flight period: May–September (3 May–5 September). There is a summer diapause.
Counties and 10km squares: Armagh, Carlow, Cavan, Clare, Cork, Derry, Donegal, Dublin, Galway, Kerry, Kildare, Kilkenny, Mayo, Offaly, Roscommon, Tipperary, Waterford, Wexford, Wicklow (19/32). The species is known from fifty-five 10km squares (55/1019).

Published records

King, 1888a as *Limnophilus* (**GALWAY:** near Ma'am (L9653). **KERRY:** Gap of Dunloe (V8787); Ross Coss [Castle] (V9488). **MAYO:** Carrowbeg R. (M0084); Mount Brown [Kinlooey] Laogh (M0381)). *McLachlan, 1903* as *Limnophilus* (**KERRY:** Killarney). *King and Halbert, 1910* as *Limnophilus* (**ARMAGH:** Mullinure (H8846). **CORK:** Glandore (W2235). **DONEGAL:** Akiboon (C0618), Fern (C1824) and Keel (C1524) Loughs; Clonkillybeg [L.] (C1219). **DUBLIN:** Howth (O3038). **GALWAY:** near Maam (L9653). **KERRY:** Gap of Dunloe (V8787); Glencar (V7184); Killarney; Ross Castle (V9488). **KILKENNY:** [Kilkenny (S5056)]. **MAYO:** Carrowbeg R. (M0084); Mount Brown [Kinlooey] L. (M0381). **WATERFORD:** Glenshelane (S1203). **WEXFORD:** Edenvale (T0427) [R. Sow]; R. Slaney near Wexford (T0718)). *Halbert, 1912* as *Limnophilus* (**MAYO:** Westport (L9984)). *Carter, 1967* (**CORK:** Cape Clear Island (V9421)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**WICKLOW:** L. Dan (O1504), adults). *O'Connor and Wise, 1984* (**KERRY:** L. Leane). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Bracken, Norton and Phillips, 1991* (**TIPPERARY:** Kilmastulla R.). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Porst and Irvine, 2009a* (**GALWAY:** Roo West turlough (M3802). **MAYO:** Kilglassan turlough (M2764). **ROSCOMMON:** Lisduff turlough (M8455)). *Porst and Irvine, 2009b* (**GALWAY:** Caranavoodaun turlough (M4515); Termon turlough (R4097). **ROSCOMMON:** Lisduff turlough (M8455)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Porst et al., 2012* (**GALWAY:** turloughs). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Derriana stream (V6274); L. Leane (V9686); R. Behy (V6589); R. Flesk (V9789)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Mulkear (R8668), (R8165); R. Tar (R9021), (R8920)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)).

Unpublished records and voucher specimens

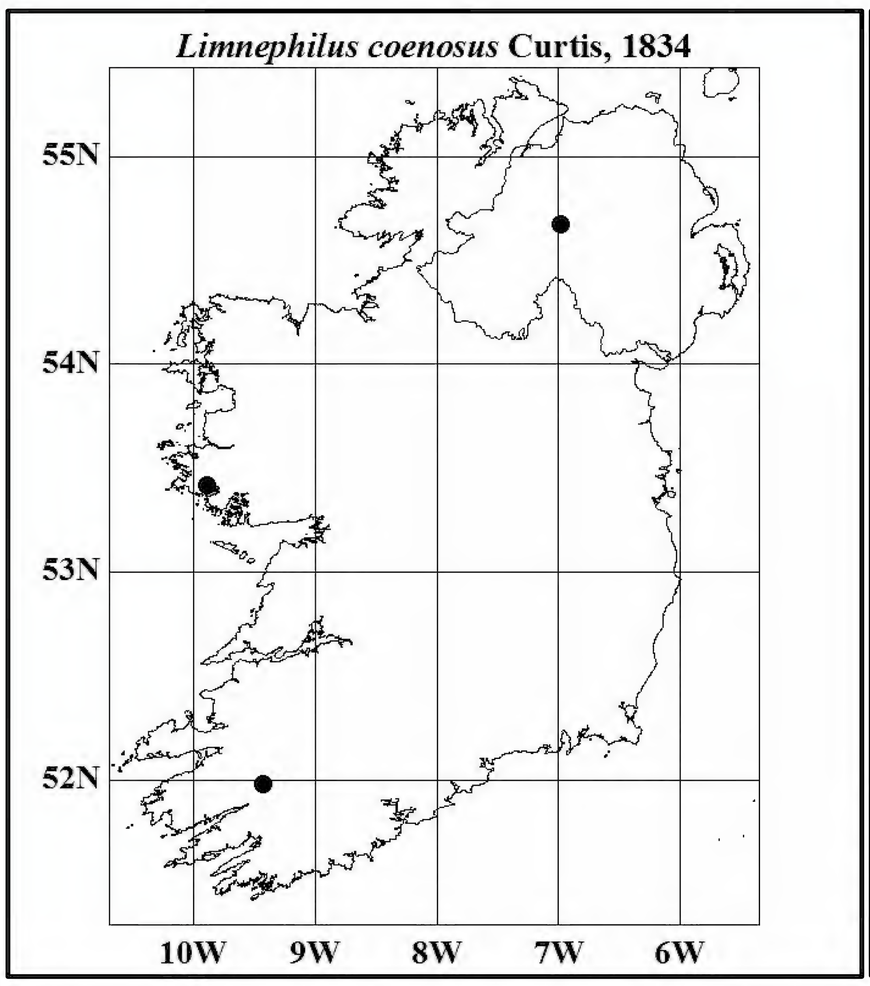
ARMAGH: Armagh (H8745), ♂ 27 June 1889, conf. JPOC (NMI). **CARLOW: Bahana Woods** (S7239), ♀ 14 June 1991, JPOC. **CAVAN: Virginia** (N5888), ♂ 3 May 1982, JPOC. **CLARE: Kilshanny** (R1293) [Aughyvackeen R.], hedgerows, ♂ 3 June 1992, JPOC; **L. Bunny** (R3796), ♂ 28 May 1998, JPOC; **R. Cloon** (R1759), ♂ 8 July 1973, JPOC (NMI). **CORK: Glandore** (W2235), ♀, det. KJM, conf. JPOC (NMI); **Glengarriff** (V9256), adult 18 May 1966, ECPC (per IDW); **Glinny, Riverstick** (W6658), seasonal streams/ponds in alder woods, MT 4♂♂3♀♀ 8-28 June

2005, MCDS, det. JPOC; **Toorgarriff** (W6991), MVLT ♂ 16 August 1980, KGMB, det. JPOC (NMI). **DERRY: Drumnaph Community Nature Reserve** (C8303), Grillagh R. near Maghera, bucket trap ♂ 5 September 2014, KGMB, det. JPOC. **DONEGAL: Glenveagh National Park** (C0018), near Owenacoo R., MT ♂♀ 20-30 May 1998, MCDS, det. JPOC, (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT 2♂♂ 10-30 July 1998, MCDS, det. JPOC; **Kilmacrenan** (C1420), adults 3 July, 3a July, 11 July, 13 July & 16 July 1891, [JJFXK], det. FCJF (HMAG). **GALWAY: Connemara National Park** (L7157), acidophilous woodland, MTS ♂ 19 May-8 June, 3♀♀ 30 June-20 July 1994, MCDS, det. JPOC; **Letterfrack** (L7158), lake near, ♂ July 1982, JPOC (NMI); **Manor Hotel** (Rosleague House) (L6957), ♀ 24 July (NMI) & ♂ 25 July 1982, JPOC/MAOC, det. JPOC. **KERRY: Derriana L.** (V6274), LT ♂♂♀♀ 1-13 July 1979, JPOC (NMI); **Doolough** (V9585), LT ♂♀ 26-27 August 1987, JPOC/MAOC, det. JPOC; **Glencar** (V7184), ♂ July 1906, conf. JPOC (NMI); **Killarney**, ♀ 12 June 1902 (BMNH), adult 3 August 1887, [JJFXK], det. FCJF (HMAG), adult 1940, BPB, det. JRH; **L. Leane** (V9686), Castlelough Bay, LT ♂ 26 August 1987, JPOC; **L. Looscaunagh** (V8879), 2♂♂ 22 May 2001, JPOC; **Mangerton Mountain** (V9780), in summit pools near Devil's Punch Bowl, larvae June 1974, IDW; **R. Laune** (V8892), Beaufort Bridge, ♂♀ 28 May 1995, JPOC; **stream** (V9385), at Dinish, ♂ 31 May 1995, JPOC; **Torc stream** (V9684), ♂♀ 30 May 1995, JPOC. **KILDARE: Grand Canal** (N9225), near Devonshire Bridge, MVLT ♂ 28 June 1977, MDCW. **MAYO: Clare Island** (L6985), adults July 1910, CJM, det. JRAG (IM) (per IDW), MT ♀ 13 August 1999, SF, conf. JPOC (NMI); **Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT ♂♀ 30 May-20 June 1997, MCDS, det. JPOC. **OFFALY: Pallas Lake** (N2719), adult May, MK. **WATERFORD: Belle Lake** (S6605), 2♂♂ 11 June 1991, JPOC; **Dunmore East** (S6800), The Woods, small stream, ♂ 27 June 1984, JPOC; **Glasha R.** (S3022), 2♂♂ 8 July 1989, JPOC/MAOC, det. JPOC; **Mahon Falls** (S3009), ♂ 5 July 1988, JPOC. **WEXFORD**: **J. F. Kennedy Park** (S7218), ♂ 20 August 1996, JPOC; **Killoughrim Forest** (S9041), stream, ♂ 27 May & 2♂♂2♀♀ 4 June 1987, JPOC; **Oaklands Wood** (S7125), ♂♂♀♀ 29 May 1987, JPOC (NMI); **Stoneyford** (T1009) [stream], ♂ 5 September 1980, JPOC; **Wexford** [Edenvale (T0427)], ♀ 28 June 1902, JJFXK, conf. JPOC (NMI). **WICKLOW: L. Dan** (O1504), ♂ 16 August 1972 (NMI), ♂ 24 August 1972, JPOC; **near Lackan** (O0110), flowing marsh on the verge, larva 10 March 1984, IDW; **near Oldcourt** (O0214), stream by hedge in field with *Callitriche* and watercress, a few larvae (v) 10 March 1984, IDW; **Powerscourt Waterfalls** (O1912), ♂8♀♀ 31 July 1986, JPOC; **Russellstown Park** (N9610), ♂ 16 August 1981, JPOC/MAOC, det. JPOC, (N9611), stream feeding lake, middle section parallel to road, larvae in footprints 10 March 1984, IDW, upper section by old hedge of mature *Fagus* and *Quercus* in field, slow, muddy and weedy, larvae (v) common 10 March 1984, IDW; **Slade of Saggart** (O0324), ♀ 7 August 1981, JPOC; **Vartry Reservoir** (O1903), temporary side ditch, larva (v) 11 March 1984, IDW; **Wicklow**

Gap (O0701), 1550feet [472m], ♂ 13 July 1927, AWS, det. JPOC (NMI).

92. *Limnephilus coenosus* Curtis, 1834

FIGURES 219-220. Known Irish and European distributions of *Limnephilus coenosus*.



One of Ireland's rarest caddisflies; *Limnephilus coenosus* is only known from three sites. In 1929, a female was found by Martin Mosely while on an angling holiday in the west of Ireland. Subsequently in 1974, Ian Wallace discovered larvae in summit pools at Mangerton Mountain, County Kerry, and from these, the author reared two females to the pupal stage by feeding them on wheat grains in an aerated container. In 2014, a male was light-trapped by Ken Bond at Creggan, County Tyrone, in an area with many small loughs and bogland. In Britain, it is reported from permanent small pools on peat moorland and also occurs in small pools on the surface of raised bogs in the lowlands (Wallace, 1991). The species will probably prove to be more widespread in Ireland but future discoveries may require energetic young collectors to search for it in bogs and upland areas. In Central Europe, the larvae inhabit temporary pools and peat bogs over 1000m above sea level (Waringer and Graf, 2011). The case is curved or straight, composed of small pieces of plant material. The larvae are mainly shredders. The species is widespread in much of Europe.

Flight period: (August) September (adults taken between 6–16 September). Two specimens reared to the pupal stage on 26 August. There are very few Irish records. Barnard and Ross (2012) give the British flight period as July–October.

Counties and 10km squares: Galway, Kerry, Tyrone (3/32). The species is known from three 10km squares (3/1019).

Published records

Mosely, 1930 as *Asynarchus* (**GALWAY:** Cashel Bay (L7942)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**GALWAY**. **KERRY**). *Wallace,*

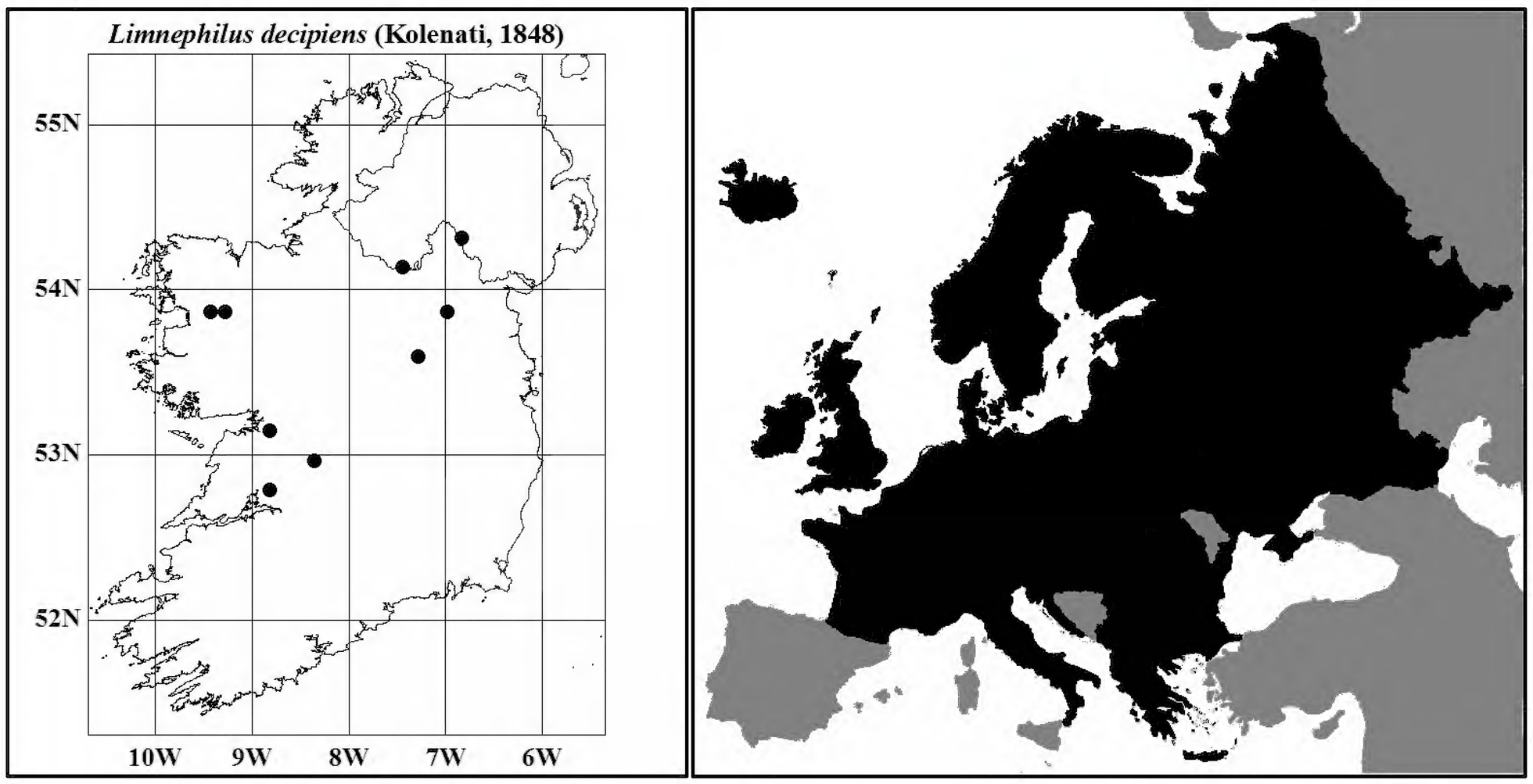
Wallace and Philipson, 1990 (**IRELAND:** western Ireland). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** western Ireland). *O'Connor and Nelson, 2012* (**GALWAY**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Bond, 2015* (**GALWAY:** Cashel Bay (L7942). **KERRY:** Mangerton Mountain (V9780). **TYRONE:** Creggan (H6278)).

Unpublished records and voucher specimens

GALWAY: Cashel Bay (L7942), ♀ 6-16 September 1929, MEM, conf. JPOC (BMNH). **KERRY: Mangerton Mountain** (V9780), near Devil's Punch Bowl, *circa* 830m, larvae collected in summit pools by IDW, 22 June 1974, 2♀♀ reared to pupal stage by JPOC 26 August 1974, det. JPOC (NMI). **TYRONE: Creggan** (H6278), LT ♂ 6 September 2014, KGMB, det. JPOC (NMI).

93. *Limnephilus decipiens* (Kolenati, 1848)

FIGURES 221-222. Known Irish and European distributions of *Limnephilus decipiens*.



Limnephilus decipiens is a local Irish species with few adult records. Although adults can be taken by light-trap, sometimes they do not seem to be attracted. Light-traps were operated beside Lough Cuilcagh, County Cavan in September 1973 and caught many caddisflies but no *L. decipiens*. Nevertheless, 2♂♂ were swept by net from nearby lakeside vegetation while going to collect the traps in the early morning. The cased larvae occur in turloughs, lakes and pools/hollows in bogs. The case is straight, composed of butted or overlapped pieces of plants and may be triangular in shape. The larvae are mainly shredders. The species is widespread in Europe but is not recorded from the Iberian Peninsula.

Flight period: August–October (4 August–2 October). Few Irish adults have been taken. Barnard and Ross (2012) give the British flight period as May–October. Those emerging in the spring have a summer diapause, but most emerge in the autumn.

Counties and 10km squares: Cavan, Clare, Fermanagh, Galway, Mayo, Monaghan, Westmeath (7/32). The species is known from nine 10km squares (9/1019).

Published records

Morton, 1892a as *Limnophilus* (**MONAGHAN:** two lakes near Glaslough (H7241)). *Morton, 1892b* as *Limnophilus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* as *Limnophilus* (**MONAGHAN:** Glaslough [Kelvey L.] (H7341)). *Moriarty, 1973a* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1973b* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1974* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1978* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**CAVAN**. **GALWAY**. **MONAGHAN**). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** central Ireland). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** central Ireland). *O Connor, Á. et al., 2004* (**GALWAY:** Caranavoodaun turlough (M4515)). *Porst and Irvine, 2009b* (**GALWAY:** Caranavoodaun turlough (M4515)). *Atalah et al., 2010* as *Limnephilus dicipiens* (**IRELAND**). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), pools and hollows). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**CLARE:** L. Cullaunyheeda (R4774)). *O'Connor, Bond and O'Connor, 2013* (**FERMANAGH:** Crom Estate, Upper L. Erne (H3524)).

Unpublished records and voucher specimens

CAVAN: L. Cuilcagh (N6389), ♀ 2 October 1972 (NMI), 2♂♂ 27 September 1973, JPOC (NMI). **FERMANAGH: Crom Estate** (H3524), Upper L. Erne, LT ♂ 24 September 2013, KGMB, det. JPOC (NMI). **GALWAY: L. Derg** (R7894), Doorosberg Pier (Point), ♂ 8 September 1978, JPOC (NMI). **MAYO: Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults September 1964, MK. **MONAGHAN: Glasslough** (H7241), ♂♂ August 1892, conf. JPOC, RMCL Coll. (BMNH) also ♂♂, Morton Coll. (NMS), ♂ August 1892, Morton Coll. (NMS), adult 8 August 1892, [Morton] (Cambridge University Entomological Coll.) (per IDW).

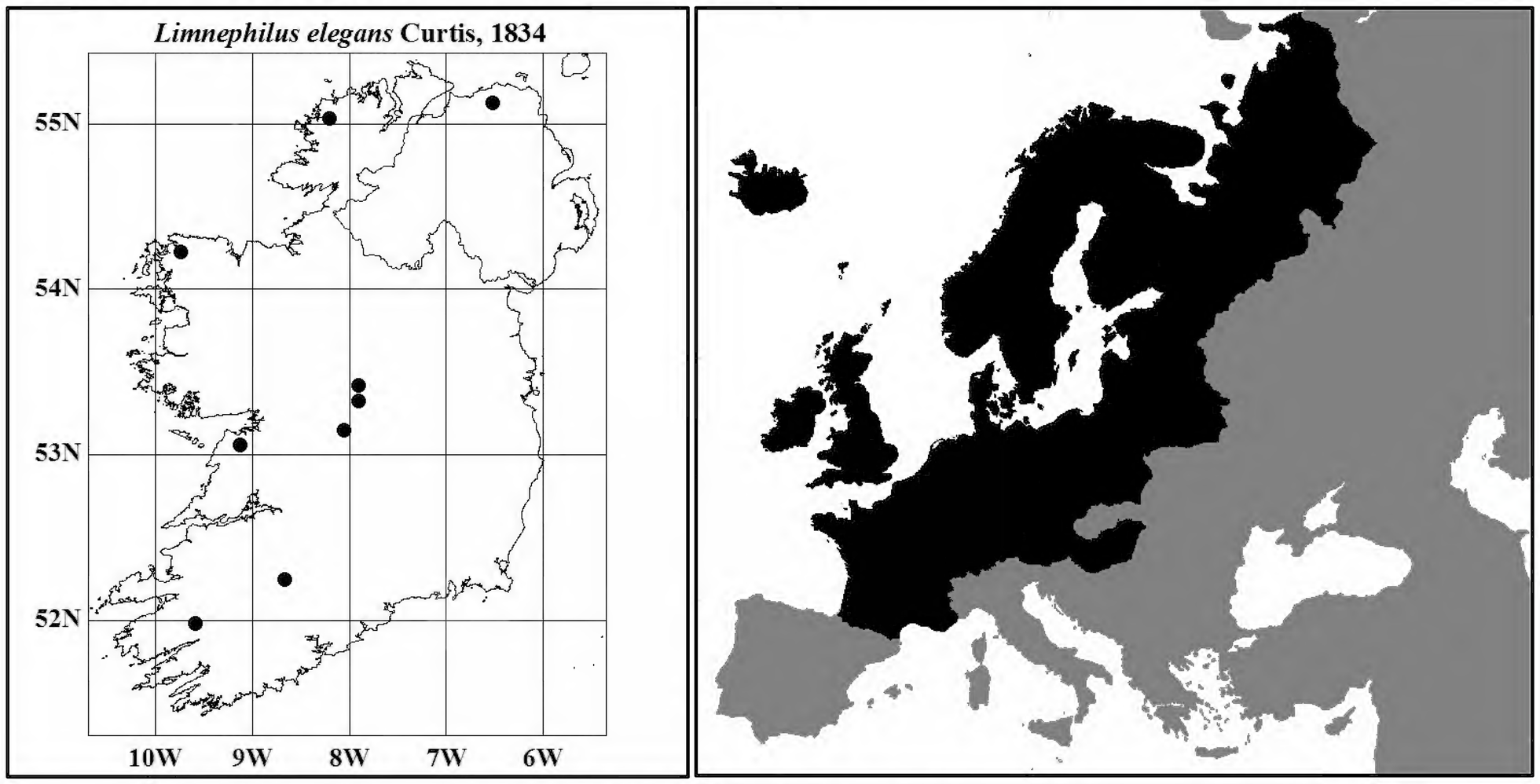
94. *Limnephilus elegans* Curtis, 1834

Limnephilus elegans is a local Irish species. The adult is distinctive with long dark and pale streaks on the wings. It is a characteristic species of Irish bogs and has been taken on Glenamoy Bog, County Mayo, in insect emergence and water traps. Populations may have been badly affected by the destruction of the peat lands on the island. The cased larvae live in small pools amongst *Sphagnum* and sedges. The case is usually composed of overlapped pieces of plant material. The larvae are mainly shredders. The species is widespread in northern and western Europe.

Flight period: May–July (?16 May–*circa* 17 July). Adults were taken in water traps in the period from 16 May to 26 June. There are only a small number of Irish adult records.

Counties and 10km squares: Antrim, Clare, Cork, Donegal, Kerry, Mayo, Offaly, Tipperary, Westmeath (9/32). The species is known from nine 10km squares (9/1019).

FIGURES 223-224. Known Irish and European distributions of *Limnephilus elegans*.



Published records

O'Connor, 1978a (**KERRY**. **MAYO**). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Wise, 1984* (**KERRY:** Muckross Lake (V9685)). *O'Connor, 1987* (**CLARE**. **KERRY**. **MAYO**. **WESTMEATH**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Bracken, 1998* (**KERRY:** Killarney). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (WICKLOW [this an error and should read KERRY and MAYO]). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Muckross Lake (V9685)). *O'Connor, Bond and O'Connor, 2014* (**ANTRIM:** Garry Bog (C9430)).

Unpublished records and voucher specimens

ANTRIM: Garry Bog (C9430), LT 2♂♂♀ 17 June 2014, KGMB, det. JPOC (NMI). **CLARE: Gragan's** [Gregan's] **Castle** (M2003), LT ♂ 22 June 1970, ECPC, conf. JPOC (NMS), MVLT adult 20 June 1970, DWHF (per IDW). **CORK: Kilcolman [Bog]** (R5811), MVLT ♀ 12 June 1992, KGMB, det. JPOC (NMI). **DONEGAL: Dunlewy** (B9119), LT ♂ *circa* 17 July 1980, JS, det. JPOC (NMI). **MAYO: Glenamoy Bog** (F9033), IET 9♂♂3♀♀, water traps ♂♂♀♀ 16 May-26 June 1972, CD, det. JPOC, ♂ conf. T. T. Macan (NMI). **OFFALY: Mongan Bog** (N0330), raised bog, window trap ♀ 21 May-13 July 1987, JAG, det. JPOC. **TIPPERARY: Redwood Bog** (M9610), MVLT ♂♀ 9 June 1986, KGMB, det. JPOC (NMI). **WESTMEATH: Coosan** (N0544), MVLT ♂ 31 May 1981, JS, det. JPOC (NMI).

[*Limnphilus extricatus* McLachlan, 1865

No voucher specimens of *Limnphilus extricatus* from Ireland have been traced and there have been no records since King and Halbert (1910). Geoff Hancock kindly

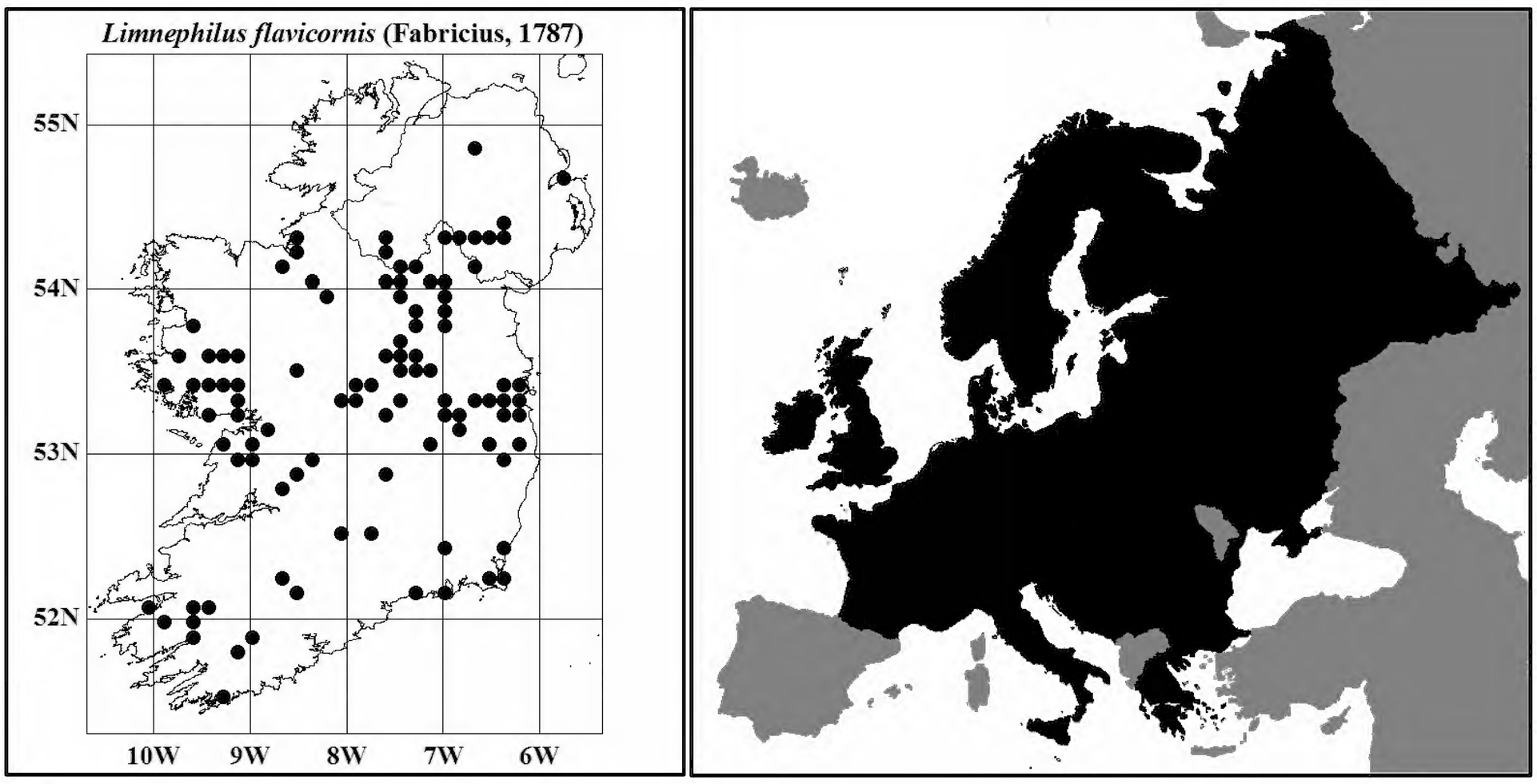
rechecked the King Collection in the Hunterian Museum in Glasgow but found no Irish specimens. The species has been removed from the Irish list until definite adult material has been collected.

Published records

King, 1888a as *Limnophilus* (ROSCOMMON: Summerhill [Cross R. at Crannagh]. WESTMEATH: Bog of Allan [Allen]). *King and Halbert, 1910* as *Limnophilus* (DONEGAL: L. Akiboon. ROSCOMMON: Summerhill [Cross R. at Crannagh]. WESTMEATH: Bog of Allen). *Botosaneanu and Malicky, 1978* (IRELAND). *O'Connor and Nelson, 2012* (mention that there is no authentic material).]

95. *Limnephilus flavicornis* (Fabricius, 1787)

FIGURES 225-226. Known Irish and European distributions of *Limnephilus flavicornis*.



Limnephilus flavicornis is a widely distributed and common species in Ireland. It can occur in large populations. The cased larvae live in a wide variety of habitats including bog dykes, canals, fens, lakes, marshes, ponds, rivers and turloughs. The species is also found in waters which dry up in the summer. The omnivorous larvae are mainly shredders. The older larvae often have complex cases using plant material such as stems arranged in a criss-cross fashion, obliquely to the axis of the case. Others may have cases of mollusc shells cemented together. In August 1982, Brenda Wallace and the author found limnephilid terrestrial egg masses under the vegetation on the shores of two lakes in County Cavan. Some of these had the larvae of the fly *Coniosternum obscura* (Fallén) (Diptera: Scathophagidae) feeding within the egg mass jelly which belonged to *L. flavicornis* and *L. marmoratus* (Berté and Wallace, 1987). *L. flavicornis* is widespread in Europe but has not been recorded from the Iberian Peninsula.

Flight period: May–November (8 May–2 November). There is a summer diapause.

Counties and 10km squares: Armagh, Cavan, Clare, Cork, Derry, Down, Dublin,

Fermanagh, Galway, Kerry, Kildare, Laois, Leitrim, Longford, Mayo, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Waterford, Westmeath, Wexford, Wicklow (24/32). The species is known from ninety-nine 10km squares (99/1019).

Published records

King, 1888a as *Limnophilus* (**ARMAGH:** Armagh (H8745). **DUBLIN:** Lucan (O0335) [R. Liffey]. **KERRY:** Dinish (V9385); Flesk and Denough [Deenagh] (V9792) Rivers; Ross Castle (V9488). **MAYO:** Carrowbeg R. (M0084). **SLIGO:** near Sligo (G7035). **WESTMEATH:** Bog of Allan [Allen] (N0639); Moate (N1838)). *Morton, 1892b* as *Limnophilus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* as *Limnophilus* (**ARMAGH:** Acton Glebe (J0640); L. Gilly [lake near Loughgilly] (H9937); etc. **DUBLIN:** Lucan (O0335) [R. Liffey]; Santry (O1640); etc. **KERRY:** Dinish (V9385); Deenagh (V9792) and Flesk (V9689) Rivers; Ross Castle (V9488). **MAYO:** Carrowbeg R. (M0084); Westport (L9984). **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **SLIGO:** near Sligo (G7035). **WESTMEATH:** Bog of Allen (N0639); Moate (N1838). **WEXFORD:** Johnstown Castle (T0216) [small lakes]. **WICKLOW:** Altidore (O2407)). *Halbert, 1912* as *Limnophilus* (**MAYO:** Westport (L9984)). *Mosely, 1927* as *Limnophilus* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Limnophilus* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Limnophilus* (**GALWAY:** Inverin (M0822); Cashel Bay (L7942)). *Kimmins, 1932* (**GALWAY:** Leenane [Leenaun] (L8762)). *Beirne, 1939* as *Limnophilus* (**KERRY:** Killarney, Cahirnane [Cahernane, R. Flesk] (V9689)). *Moriarty, 1972b* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1973a* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1973b* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1974* (unsafe larval identification (Wallace, pers. comm.)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (01919) [An * in this paper indicates adults taken and determined by JPOC]). *McCarthy, 1977* (unsafe larval identification). *Moriarty, 1978* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H6906), adults). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7186)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Middle Lake; Upper Lake [Killarney]). *O'Connor, 1987* (**IRELAND:** widespread). *Berté and Wallace, 1987* (**CAVAN:** L. Cuilcagh (V6389); Parker's Lake (N6497)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 2 out of 70 sampled sites). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O Connor, Á. et al., 2004* (**GALWAY:** Caranavoodaun turlough (M4515)). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 3 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Anon., 2009b* (**LAOIS:** R. Erkina (S2878)). *Atalah et al., 2010* (**IRELAND**). *Anon., 2011* (**WEXFORD:** Rathdowney Stream (T0913)); *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog

(N4357), pools). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**SLIGO:** Templehouse L. (G6117)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); Muckross Lake (V9485), (V9685)). *O'Connor, Bond and O'Connor, 2013* (**FERMANAGH:** Upper L. Erne (H3524)). *O'Connor and Davy-Bowker, 2014* (**ARMAGH:** R. Cusher (J0350). **FERMANAGH:** R. Finn (H4220)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Mill L. (H2438); Upper L. Erne (H2339), (H2244), (H2731). *Anon., 2015a* (**CLARE:** L. Bunny (R3695). **DOWN:** Crawfordsburn Country Park (J4682)).

Unpublished records and voucher specimens

ARMAGH: Acton (Acton Glebe) (J0640), ♂ 26 June 1900, ♀ 6 September 1905, [WFJ], conf. JPOC (NMI); **Armagh** (H8745), 2♂♂ 8 June 1889, conf. JPOC (NMI); **L. Gill** [lake near Loughgilly] (H9937), ♀ 14 September 1892, [WFJ], conf. JPOC (NMI). **CAVAN: Corrakane L.** (H4000), small lake, LT ♀ 4-5 August 1973, JPOC; **L. Cuilcagh** (N6389), 2♂♂ 10 August & ♂♀ 2 October 1972, ♂ 27 September & LT 4♂♂ 26-27 September 1973, 7 larvae exposed rocky shore, 15 larvae reed bed & 38 larvae sheltered rocky shore, 29 March 1973, JPOC; **L. Inchin** (H3808), ♀ 28 June 1975, JPOC; **L. Mullagh** (N6785), 21♂♂20♀♀ 10 August, 2♂♂♀ 31 August & 2♀♀ 4 October 1972, 2♀♀ 1 August & ♀ 27 September 1973, 6 larvae exposed rocky shore, 59 larvae reed bed & larva sheltered rocky shore, 3 April 1973, JPOC, larvae 1996/1997, JW; **L. Oughter** (H3308), ♀ 4 August 1973, JPOC; **L. Sheelin** (N4686), Crover, ♂ 6 August 1990, ♀ 12 September 1991, (N4784), LT ♂ 16-17 June 1973, JPOC, (N4785), Mount Nugent, ♀ 1 August 1986, CM/OSF (SINMNH); **L. Sillan** (H6906), 2♂♂♀ 11 August 1972 (NMI), LT 6♂♂ 31 July-1 August 1973, 4 larvae reed bed, 26 March 1973, (H7007), 3♂♂♀ 9 August 1972, (H7106), 5♂♂2♀♀ 11 August 1972, JPOC; **Muddy L.** (H7205), ♂ 1 August 1973, JPOC; **R. Barora** (N6893), LT ♂ 1-2 August 1973, JPOC; **R. Laragh** (H5210), LT ♀ 2-3 August 1973, JPOC; **Town Lake** (H6014), Cootehill, adult 12 August 1965, JRH. **CLARE: Ballynalacken area** (M1000), Burren, adult 2-14 June 1962, JDB, det. PHW (BMNH); **L. Atedaun** (R2989), ♂ 1 September 1973, JPOC; **L. Bunny** (R3796), Burren, ♂ 31 August 1973, JPOC, ♂♀ 28 May 1984, JPOC/MAOC, det. JPOC; **L. Derg** (R7186), Mount Shannon, LT ♂♀ 26-27 August 2003, KGMB, det. JPOC, (R6878), 10♂♂9♀♀ LT 2-3 September 1973, JPOC (NMI); **L. Doon** (R5674), ♀ 12 July 1973, JPOC; **L. Inchiquin** (R2789), LT ♂ 31 August-1 September 1973, JPOC; **R. Fergus** (R3489), ♀ pupa 11 July 1973, (R2591), above L. Inchiquin, ♀ 1 September 1973, JPOC. **CORK: Buttevant** (R5408) [R. Awbeg], MVLT ♂ 17 August 1995, KGMB; **Gearagh** (W3070), ♀ 30 May 1985, KGMB; **Liss Ard House** (W1331), south of Skibbereen, MVLT 6♂♂11♀♀ 24 August 1991, KGMB, det. JPOC; **L. Abisdealy** (W1331), south of Skibbereen, MVLT 2♂♂ 15-16 August 1992, KGMB, det. JPOC; **L. Allua** (W1965), ♂ 16 August 1985, KGMB, det. JPOC; **Rahan** (W6398), marshy area near small river, light ♂ June-September 1988, PS, det. JPOC. **DERRY: Drumnaph Community Nature Reserve** (C8303), Grillagh R. near

Maghera, bucket trap ♀ 5 September 2014, KGMB, det. JPOC. **DUBLIN: Bohernabreena** (O0921), reservoir, ♂♀ 11 June 2015, JPOC/MAOC, det. JPOC; **Castleknock** (O0837), ♂ 29 July 1986, CM/OSF (SINMNH); **Marlay Park** (O1526), ♂ reared 23 June and ♀ 9 July 1987, MK, det. JPOC; **Phoenix Park** (O1036), Quarry Pond, 3♂♂♀ 14 June 1972, ♂ 10 June 1973 (NMI), JPOC; **R. Liffey** (O0735), Strawberry Beds, among debris of emergent vegetation, larvae (v) 12 March 1984, IDW; **Royal Canal** (O0838), The Twelfth Lock, in spider's web, ♀ 11 September 2014, JPOC; **Santry** (O1640), ♀ June 1894, JNH, conf. JPOC (NMI); **Seapoint** (O2229), LT adult September 1947, BPB, det. JRH. **FERMANAGH: Crom Estate** (H3524), LT 2♂♂ 24 September 2013, KGMB, det. JPOC (NMI). **GALWAY: Frenchpark** (M4114), ♂ 9 July 1996, KGMB; **Home Lake** (L9139), Inverbeg, adult 24 September 1946, JRH; **Inverin** (M0822), adults 17 July-2 August 1926, MEM (BMNH); **Loch an Droichid outflow** (M0542), Derryerglinna, LT ♀ 13 September 2014, MG/CC, det. MG; **L. Corrib** (M1745), adults May-August 1964, MK, (M2531), Hurney's Point [near Moycullen], MVLT, ♂ 12 August, ♂ 12 September, ♀ 14 September, 2♂♂ 16 September & ♂ 25 September 2003, KGMB, det. JPOC, (M2642), Keekill, LT 109♂♂2♀♀ 2 August 2003, KGMB, det. JPOC, (M2741), Cloonmore, LT ♂ 22 July 2014, MG/CC, det MG; **L. Mask** (M0957), Kilbeg Lower, LT 2♂♂3♀♀ 16 August 2014, MG; **Mountbellew** (M6646), pleasure lake north shore 2♂♂ 21 July 2012, MG; **R. Corrib** (M2926), NUI Galway, 2 larvae 7 March 2011, D. McHugh, conf. MG. **KERRY: Doolough** (V9585), LT ♂♂♀♀ 26 August 1987, JPOC/MAOC, det. JPOC; **Kenmare** (V9471), adult 31 May-1 June 1962, JDB, det. PHW (BMNH); **Killarney**, adult, E. Birchall (BMNH), adult 4 August 1939, BPB (BMNH), adult August 1926, EFB, det. JRH, ♀ 29 July 1887, JJFXK, conf. JPOC (NMI); **Killarney Lakes**, trout stomachs, larva, UCD, det. JPOC; **L. Leane**, open lake, ♂ 8 May 1974, (V9686), boat house, ♀ 24 August 1973, ♂♀ 29 May 1974, 3 larvae reed bed, 13 April 1973 & 15 larvae reed bed containing charcoal, 10 April 1973, JPOC; **Muckross Lake** (V9685), boat house, ♀ 19 May 1973, 10 larvae reed bed, 10 April 1973, JPOC; **R. Caragh** (V7184), ♀ 3 July 1973, JPOC; **Torc stream** (V9684), larva 13 April 1973, JPOC; **Upper Lake, Killarney** (V9181), 2♂♂ 29 May 1974, larva exposed rocky shore, & 4 larvae reed bed, 13 April 1973, (V9282), 2♂♂ 29 May 1974, JPOC (NMI), dredge larva June 1972, EJW (NMI). **KILDARE: Carbury** (N7034), ♀ 19 July 1973, KGMB, det. JPOC; **Louisa Bridge** (N9936), ♀ 22 August 1982, JPOC; **Lullymore** (N6825), dyke in bog, 2 larvae 18 February 1973, JPOC; **Milltown** (N7617), canal at, ♀ 3 August 1986, CM/OSF (SINMNH); **Newbridge (Pollardstown) Fen** (N7715), MVLT near springs, canal drains and *Schoenus* fen, ♀ 22 July 1989, KGMB/JAG, det. JPOC; **R. Liffey** (N8827), Clane, 3♀♀ 11 July 1972, JPOC. **LAOIS: The Derries** (N5805), ♂ 20 September 1982, JPOC. **LEITRIM: Killegar Estate** (H2507), LT ♂♂♀ 16 August 1991, SW, det. JPOC (NMI). **LONGFORD: Royal Canal** (N2360), Abbeystrule, larvae 21 June 1983, RM, det. BW (per IDW). **MAYO: Cloghan's Hill** (M3058) [Black R.], adult

11 July 1972, LSG (MANM) (per IDW); **L. Mask** (M1259), (M1465), adults May-August 1964, MK; **L. Moher** (L9777), larvae 1996/1997, JW; **Westport** (L9984), ♀, JJFXK, conf. JPOC (NMI), ♂ (NMI). **MONAGHAN: Castleblaney** (H8319) [L. Muckno], ♀ 1 August 1987, KGMB, det. JPOC; **Glaslough** (H7241), ♀ 12 August 1973, JPOC. **OFFALY: Clorhane** (M9827), ♂ 19 September 1996, (M9927), MVT 2♀♀ 12 August 1986, KGMB, det. JPOC; **Grand Canal** (N3928), branch of, larvae 23 June 1983, RM, det. BW (per IDW); **Mongan Bog** (N0330), MVLT ♀ 24 August 1983, JAG, det. JPOC; **Pallas Lake** (N2719), larvae 22 June 1983, RM, det. BW (per IDW). **ROSCOMMON: L. Key** (G8404), Rockingham, ♂ 11 August 2001, JPOC. **SLIGO: L. Arrow** (G7711), adults May-August 1964, MK; **Rahaberna** (G6940), 3♂♂ 8 August 1988, DCFC, det. JPOC. **TIPPERARY: Kilconnell** (S1339), MT ♀ 2-17 June 2009, PA, det. JPOC; **Marl Lake** (R9644), 2♂♂ 23 August 2000, JPOC. **WATERFORD: Ballin L.** (S4503), near Kill, ♂ 19 June 1991, JPOC; **Ballyscanlan L.** (S5403), ♂ 8 July 2014, JPOC/MAOC, det. JPOC; **Woodstown Marsh** (S6905), ♂♀ 3 July 1990, JPOC. **WESTMEATH: Ballynafid Lake** (N4160), larvae 20 June 1983, RM, det. BW (per IDW), near Ballynafid (N4-6-), ♀ 29 July 1977, DCFC, det. JPOC (NMI); **Coosan** (N0544), Creaghduff, ♂♂♀♀ 17 August 1980, ♂♂♀♀ 31 May 1981, JS, det. JPOC (NMI); **Killucan** (N5949), ♂ 18 July 1973, KGMB, det. JPOC; **L. Derravaragh** (N3968), bay near R. Inny, IETS 1973/1974 adult, PG; **L. Ennell** (N3947), reed bed, 3 larvae 15 May 1973, (N4046), Tudenham Park, ♂ 2 November 1995, all JPOC; **L. Sheelin** (N4686), Crover, ♀ 12 September 1991, JPOC (NMI); **L. Sheever** (N4655), larvae 19 June 1983, RM, det. BW (per IDW); **Royal Canal** (N3652), at Shanonagh Bridge, larvae 23 June 1983, RM, det. BW (per IDW). **WEXFORD: Curracloe** (T1127), at marshes behind the sand-dunes, ♀ 9 June 1982, JPOC; **Mount Garrett Wood** (S7230) [R. Barrow], ♂ 17 June 1982, JPOC/MAOC, det. JPOC; **near Bridgetown** (S9810), pond, ♀ 4 June 1987, JPOC. **WICKLOW: Altidore** (O2407), ♂ July 1891, conf. JPOC (NMI); **King's R.** (O0401), LT ♂ 22-23 July 1973, JPOC; **R. Avonbeg** (T1487), LT ♂ 19-20 September 1973, JPOC; **R. Glencullen** (O1919), ♂ 22 July 1973, JPOC; **Vartry Reservoir** (O1903), ♂2♀♀ 19 August 1973, LT 15♂♂16♀♀ 19-20 August 1973, JPOC, (O2004), Roundwood, LT 3♂♂ 14 August 1983, HAD, conf. JPOC.

96. *Limnephilus fuscinervis* (Zetterstedt, 1840)

Limnephilus fuscinervis is a local Irish species which has not been found in Britain. It is very common in the reed beds of lakes in the County Cavan area, both calcareous and acidic. The larval head is shown (Fig. 229). The cased larvae occur in fens, lakes and pools among plants or litter of *Carex* and *Phragmites*. Often they live deep in erosion holes in reed beds where there are accumulations of plant debris. Like other members of the genus, they are probably mostly shredders and possess long and slender cases composed of overlapping pieces of plant material (Fig. 230). Outside Ireland, the species is found mainly in Northern Europe.

FIGURES 227-228. Known Irish and European distributions of *Limnephilus fuscinervis*.

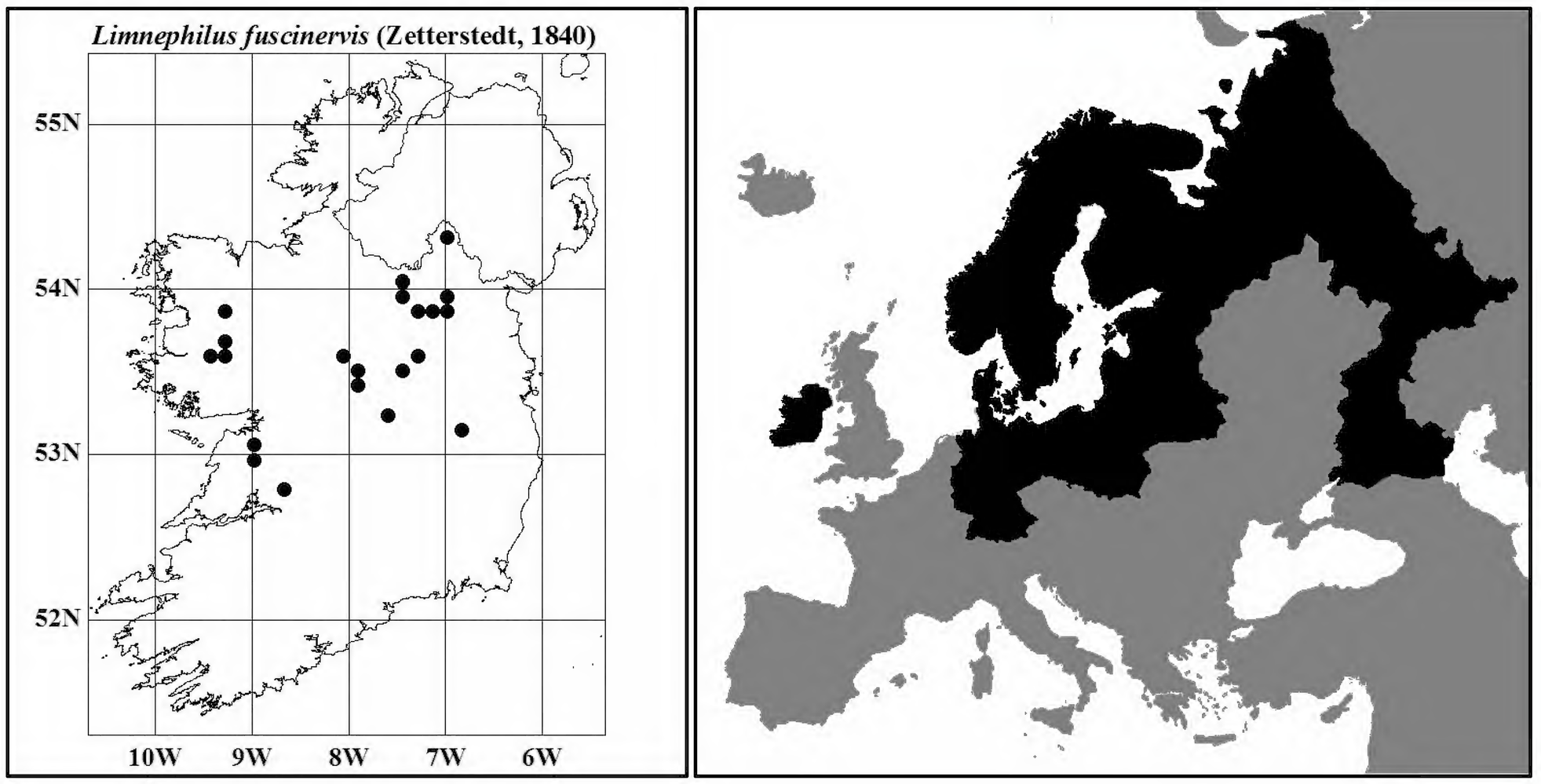
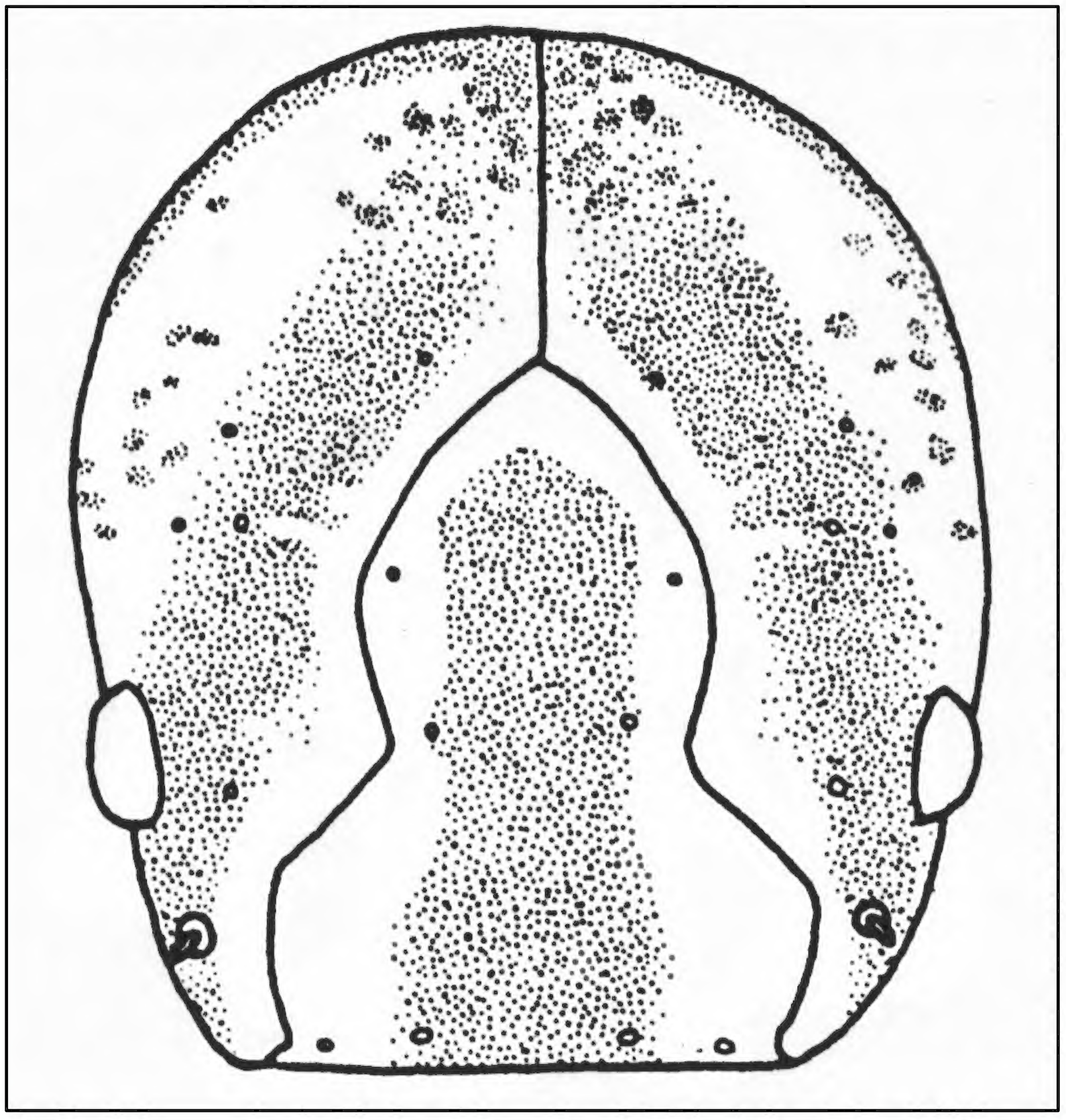


FIGURE 229. The larval head of *Limnephilus fuscinervis* (after Wallace, Wallace and O'Connor, 1985).



Flight period: May–September (28 May–12 September).
Counties and 10km squares: Cavan, Clare, Galway, Kildare, Mayo, Monaghan, Offaly, Roscommon, Westmeath (9/32). The species is known from twenty-one 10km squares (21/1019).

Published records

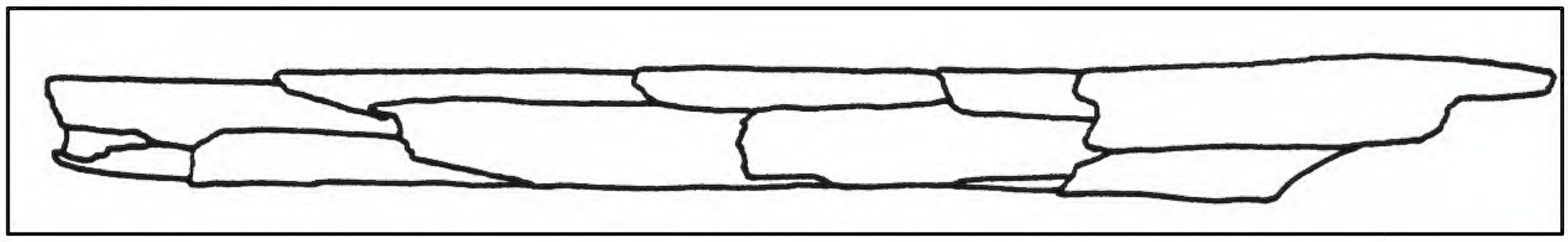
Morton, 1909a as *Limnophilus* (**MAYO:** Castlebar L. (M1389) (L. Lannough)). *Morton, 1909b* as *Limnophilus* (**MAYO:** Castlebar (M1389)). *King and Halbert, 1910* as *Limnophilus* (**MAYO:** Castlebar L. (M1188)). *Halbert, 1912* as *Limnophilus* (**MAYO:** Castlebar (M1389) (L. Lannough)). *Morton, 1916* as *Limnophilus* (**MONAGHAN:** lake near Emyvale (H6843)). *Praeger, 1950* as *Limnophilus* (**MAYO:** Castlebar L. (M1188)). *O'Connor and Norton, 1977* (**WESTMEATH:** L. Coosan (N0544)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1978a* (**IRELAND:** rediscovered). *Wallace, Wallace and O'Connor, 1985* (**CAVAN:** lake near Bellananagh (H4000); L. Drummany (H3711); L. Cuilcagh (N6389); Parker's L. (N6497); L. Inchin (H3808). **CLARE:** Doon L. (R5674). **MAYO:** L. Lannough [M1389]. **MONAGHAN:** lake near Emyvale [H6843]. **OFFALY:** Pallas L. (N2719). **WESTMEATH:** Coosan L. (N0544)). *O'Connor, 1987* (**CAVAN**. **CLARE**. **KILDARE**. **MAYO**. **MONAGHAN**. **OFFALY**. **WESTMEATH**). *Crichton, 1990* (**IRELAND:** six Irish vice-counties). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** Central Ireland, locally common). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** Central Ireland, locally common). *Millane, 2006* (**MAYO:** L. Carra (M1673)). *Donohue et al., 2009* (**IRELAND**). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), hollows). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

CAVAN: Corrakane L. (H4000), small lake, 2♂♂♀ 16 June 1973, JPOC (NMI). **L. Cuilcagh** (N6389), ♂♂♀♀ 21 August 1982 (NMI), JPOC/MAOC/IDW/BW, ♀ 31 August 1986, JPOC; **L. Drummany** (H3712), 3♂♂ 4 August 1973, JPOC; **L. Inchin** (H3808), 3♂♂3♀♀ 28 June 1975, JPOC (NMI); **L. Ramor** (N5987), ♀ 4 June 1990, MAOC, det. JPOC (NMI); **L. Sheelin** (N4686), Crover, ♂ 12 September 1991, JPOC (NMI). **CLARE: Doon L.** (R5674), ♂♀ 12 July 1973, JPOC (NMI); **L. Bunny** (R3696), Burren, 3♂♂5♀♀ 28 May 1984, JPOC/MAOC, det. JPOC (♂♀ BMNH, NMI); **L. Cullaun** (R3290), larvae 1996/1997, JW. **GALWAY: L. Mask** (M0957), Kilbeg Lower, LT ♀ 16 August 2014, MG. **KILDARE: Pollardstown (Newbridge) Fen** (N7715), ♂ 13 August 1980, JPOC. **MAYO: Castlebar** [L.] (M1188), ♂ 11 June 1909, [JNH], det. KJM, conf. JPOC (NMI), 3♀♀ July 1911, conf. JPOC (NMI); **L. Mask** (M1259), (M1465), adults September 1964, MK. **MONAGHAN: Emyvale** (H6843), ♀ 4-11 August 1916, KJM, conf. JPOC (NMS). **OFFALY: Pallas Lake** (N2719), ♂ 18 June 1972, JPOC. **ROSCOMMON: St John's Wood** (M9956), ♂ 30 July 1992, SW, det. JPOC (NMI). **WESTMEATH: Coosan L.** (N0544), Athlone, LT

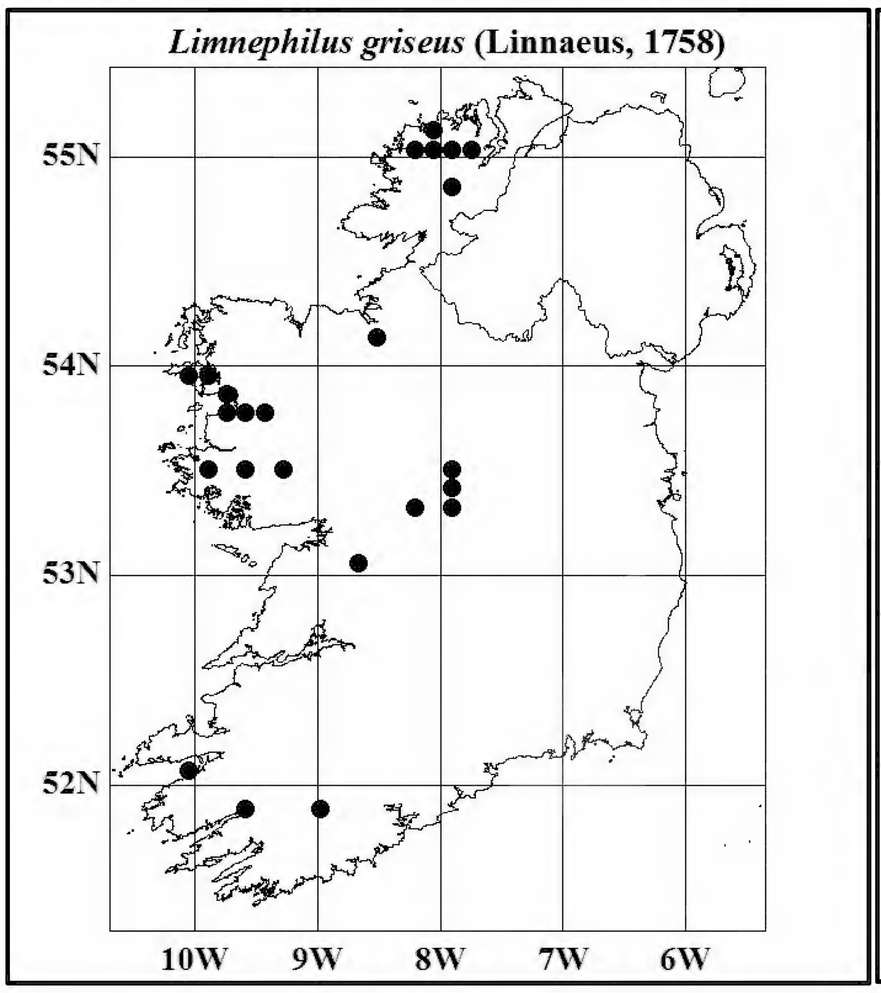
3♂♂♀ 2 July 1980, JPOC (♂ NMS, NMI); **L. Derravaragh** (N4662), ♀ 18 August 1978, JPOC; **L. Ennell** (N4146), adult May 1964, MK; **L. Ree** (N0446), Hare Island, ♀ 19 June 1976, JPOC.

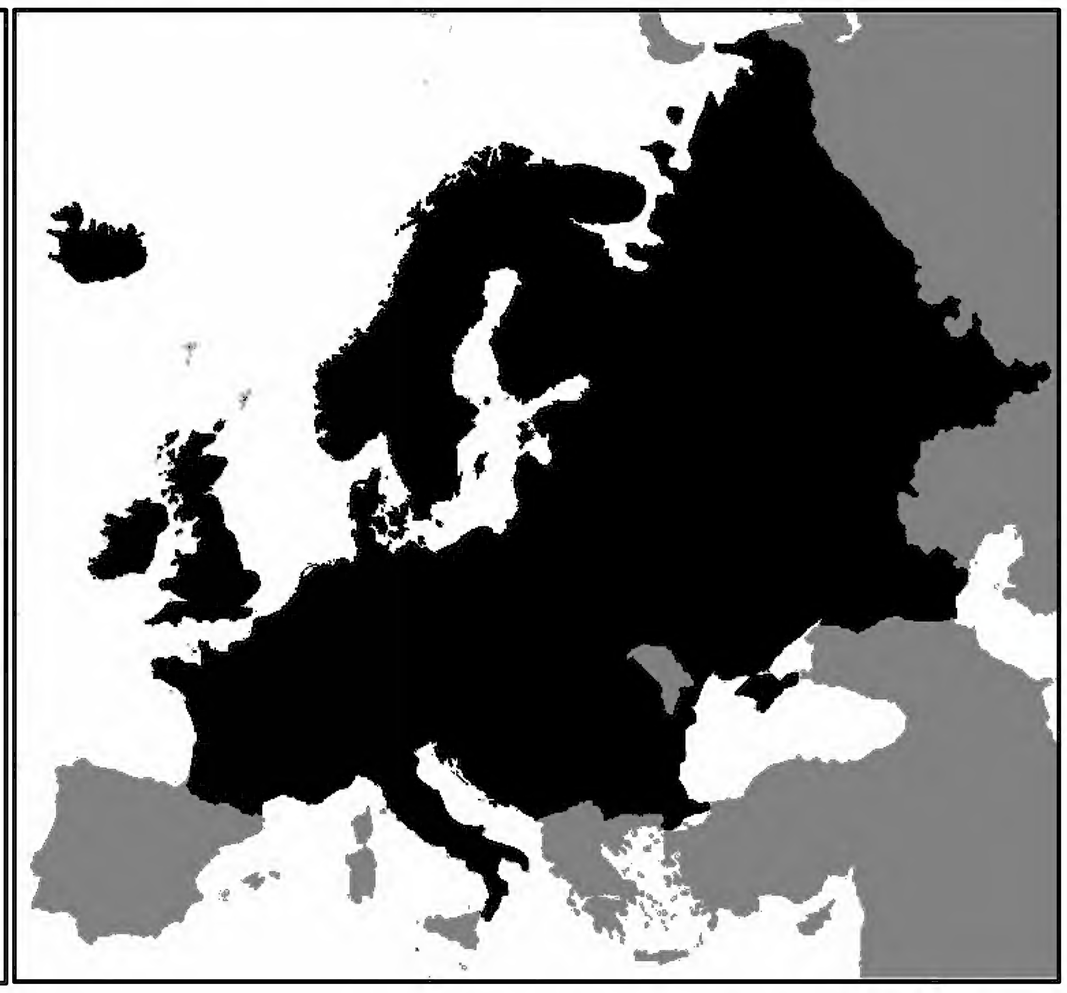
FIGURE 230. The larval case of *Limnephilus fuscinervis* (after Wallace, Wallace and O'Connor, 1985).



97. *Limnephilus griseus* (Linnaeus, 1758)

FIGURES 231-232. Known Irish and European distributions of *Limnephilus griseus*.





To-date, all Irish records of *Limnephilus griseus* are from the western half of the island. This distribution would appear to be anomalous as the species is widespread in Europe and found throughout Britain. Adults have been recorded from bogs, lakes and rivers. No Irish larvae have been collected but the habitat is probably similar to that in Britain where the species appears to like acid waters and is found in pools and marshy spots which dry up or considerably diminish in summer. It is also found in tiny *Sphagnum*-filled pools on mountains (Wallace, 1991). It should be present therefore in the mountains and bogs of County Wicklow. The curved case may be made of plant material or sand grains or both. The larvae are mainly shredders.

Flight period: May–September (20/30 May–4 September). Adults were taken in a Malaise trap during the period 20 to 30 May. Barnard and Ross (2012) give the British flight period as April–May, August–October with a summer diapause.

Counties and 10km squares: Clare, Cork, Donegal, Galway, Kerry, Mayo, Offaly, Sligo, Westmeath (9/32). The species is known from twenty-four 10km squares (24/1019).

Published records

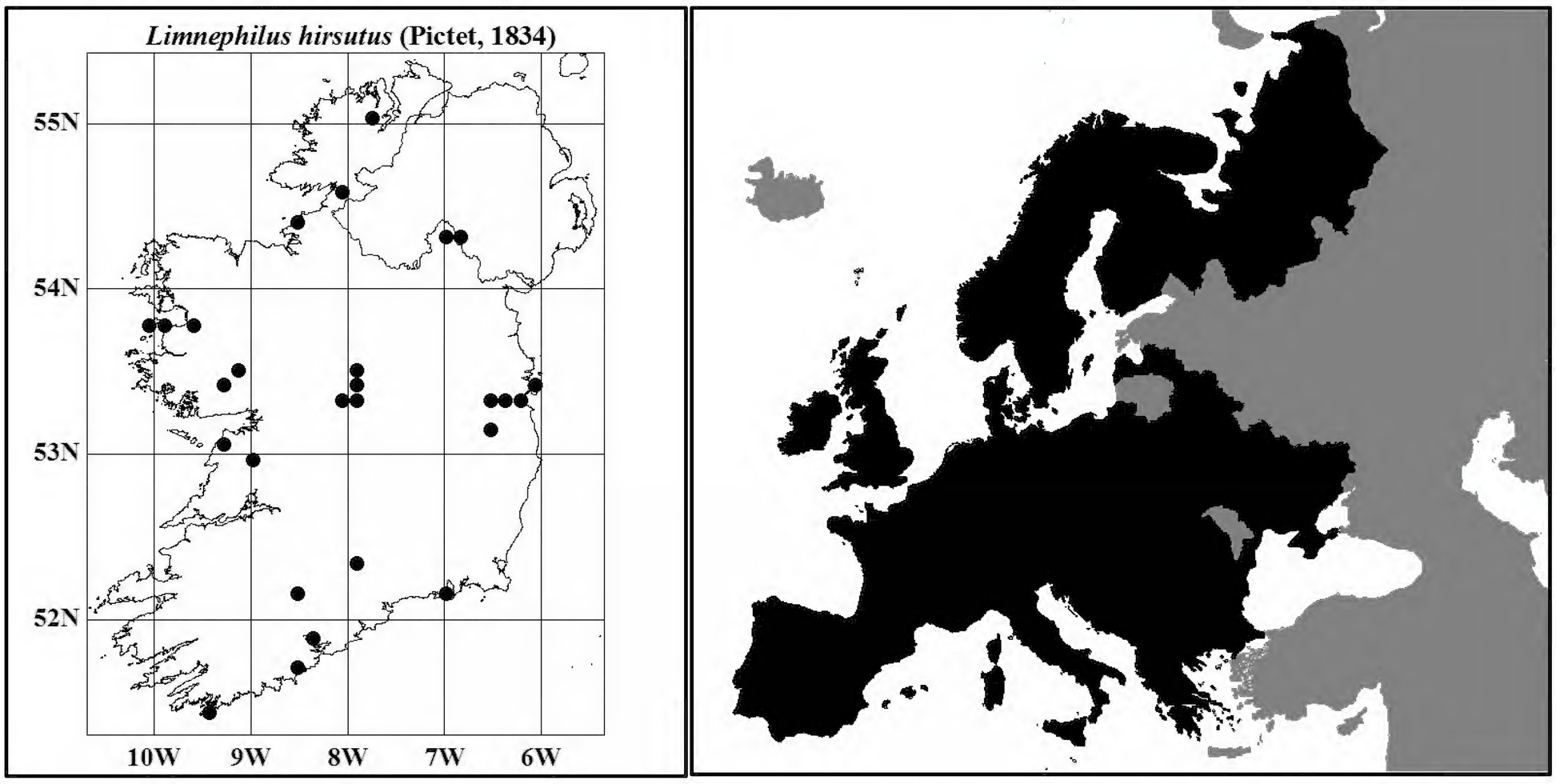
King, 1888a as *Limnophilus* (**DONEGAL:** Cloghan (H0399) [R. Finn]. **GALWAY:** near Ma'am (L9653). **MAYO:** Carrowbeg R. (M0084); Kip Laogh (M0880). **SLIGO:** Mackree [Markree] Castle (G6925). **WESTMEATH:** Bog of Allan [Allen] (N0639); Coosan (N0446) [L. Ree]). *King and Halbert, 1910* as *Limnophilus* (**DONEGAL:** Cloghan (H0399) [R. Finn], Cottian (C1318), also Gorteen (C0818), Keel (C1524) and Muethin Loughs. **GALWAY:** Ballinasloe (M8530) [R. Suck]; near Maam (L9653). **MAYO:** Carrowbeg R. (M0084); Kip L. (M0880). **SLIGO:** Markree Castle (G6925) [Unshin R.]. **WESTMEATH:** Bog of Allen (N0639); Coosan (N0446) [L. Ree]). *Halbert, 1912* as *Limnophilus* (**MAYO:** Achill Island (F6405); Mulranny (L8296); Westport (L9984)). *Speight, 1977* as *Limnophilus* (**WESTMEATH:** Coosan Lake [Coosan (N0446)]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** R. Behy (V6589)).

Unpublished records and voucher specimens

CLARE: R. Bleach (R6096), LT ♂ 3-4 September 1973, JPOC (NMI). **CORK: Gearagh** (W3371), ♂ 21 August 1983, KGMB, conf. JPOC. **DONEGAL: Dunlewy** (B9119), LT ♂ 17 July 1980, JS, det. JPOC (NMI); **Glenveagh National Park** (C0423), MVLT ♀ 11 August 1984, KGMB, det. JPOC (NMI), RLT ♀ 6 August 1982, COK, det. JPOC, (C0018), near Owenacoo R., MT ♀ 20-30 May 1998, MCDS, det. JPOC (NMI); **Kilmacrenan** (C1420), 6♂♂2♀♀ 23 July 1891, [JJFXK] (HMAG); **Ray R.** (B9530), Falcarragh, ♀ 21 August 1987, TMN, det. JPOC (NMI). **GALWAY: Ballinasloe** (M8530) [R. Suck], ♂ 15 August 1891, [JJFXK] (HMAG); **Cong** (M1455) [L. Corrib], ♂ 24 July 1894, (HMAG); **Connemara National Park** (L7157), RLT ♂♀ 18 August 1982, COK, det. JPOC (NMI), woodland, MT 2♀♀ 19 May-8 June 1994, MCDS, det. JPOC (NMI). **KERRY: Behy R.** (V6589), stream/waterfall, ♂ LT 26-27 August 1973, JPOC (NMI); **Kenmare** (V9471), ♂ 29 May 1961, ECPC, conf. JPOC (NMS). **MAYO: Croagh Patrick** (L8981), Carrowmacloughlin, MVLT adult 3 August 1989, KGMB, det. JPOC; **Mulranny** (L8296), ♀, WFJ, conf. JPOC (NMI); **Sraheen L.** (F7100) [Achill Island], ♂♀♀ 12 June 1909, JNH, conf. JPOC (NMI). **OFFALY: Mongan Bog** (N0330), centre of bog, adult 24 August 1983, KGMB, conf. JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 13 June, ♂ 5 July & ♂ 18a July 1888, [JJFXK] (HMAG).

98. *Limnephilus hirsutus* (Pictet, 1834)

FIGURES 233-234. Known Irish and European distributions of *Limnephilus hirsutus*.



Limnephilus hirsutus is widely distributed in Ireland. No Irish larvae have been taken but the habitat is probably similar to that in Britain *viz*. tiny trickles and ditches, usually on bare clay, and consequently common on suitable seaside cliffs. Most have a high calcareous content. These may be somewhat immature habitats forcing the adults to fly widely and consequently be light-trapped (Wallace, 1991). In England, Boyce (2002) classified *L. hirsutus* as a seepage specialist i.e. a species primarily found in seepages and their margins, but which occasionally occur in other situations. Generally in excess of 75% of British records refer to these habitats. It seemed to be particularly associated with slumping cliff seepages. These usually occur in areas where unusually soft rock strata are being actively eroded by both the sea and by freshwater running over the strata. Frequently these freshwater bodies take the form of networks of seepages arising towards the upper part of the cliff. All of this fits in well with the Irish experience as adults have been commonly taken by light-traps in areas such as on Sherkin Island, County Cork, with its great range of coastal cliffs. The case is curved and composed of sand-grains. The larvae are mainly shredders but may graze and predate. The species is widespread in Europe.

Flight period: May–September (31 May–3 September). Possibly a diapause.

Counties and 10km squares: Clare, Cork, Donegal, Dublin, Galway, Kildare, Mayo, Monaghan, Offaly, Sligo, Tipperary, Waterford, Westmeath, Wicklow (14/32). The species is known from twenty-seven 10km squares (27/1019).

Published records

King, 1888a as *Limnophilus* (**DUBLIN:** Dublin. **MAYO:** Carrowbeg R. (M0084); Knappagh Laogh [Knappaghbeg] (M0080). **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Shannon (N0243)). *Morton, 1892b* as *Limnophilus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* as *Limnophilus* (**DONEGAL:** Coxtown (G9271); near Kilmacrennan (C1420) [Leannan R.]; L. Keel

(C1524). **DUBLIN**. **MAYO:** Carrowbeg R. (M0084); Knappagh [Knappaghbeg] L. (M0080). **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Shannon (N0243)). *Halbert, 1912* as *Limnophilus* (**MAYO:** Westport (L9984)). *Mosely, 1930* as *Limnophilus* (**GALWAY:** Oughterard (M1343)). *Beirne, 1939* as *Limnophilus* (**DUBLIN:** Seapoint (O2229)). *Beirne, 1941* as *Limnophilus* (**DUBLIN:** Seapoint (O2229)). *Hickin, 1951* (**SLIGO:** Mullagmore (G7155)). *Hickin, 1967* (**SLIGO**)). *Speight, 1977* as *Limnophilus* (**WESTMEATH:** Coosan Lake [Coosan Point (N0446)]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Barnard, 1981* (**IRELAND**). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**).

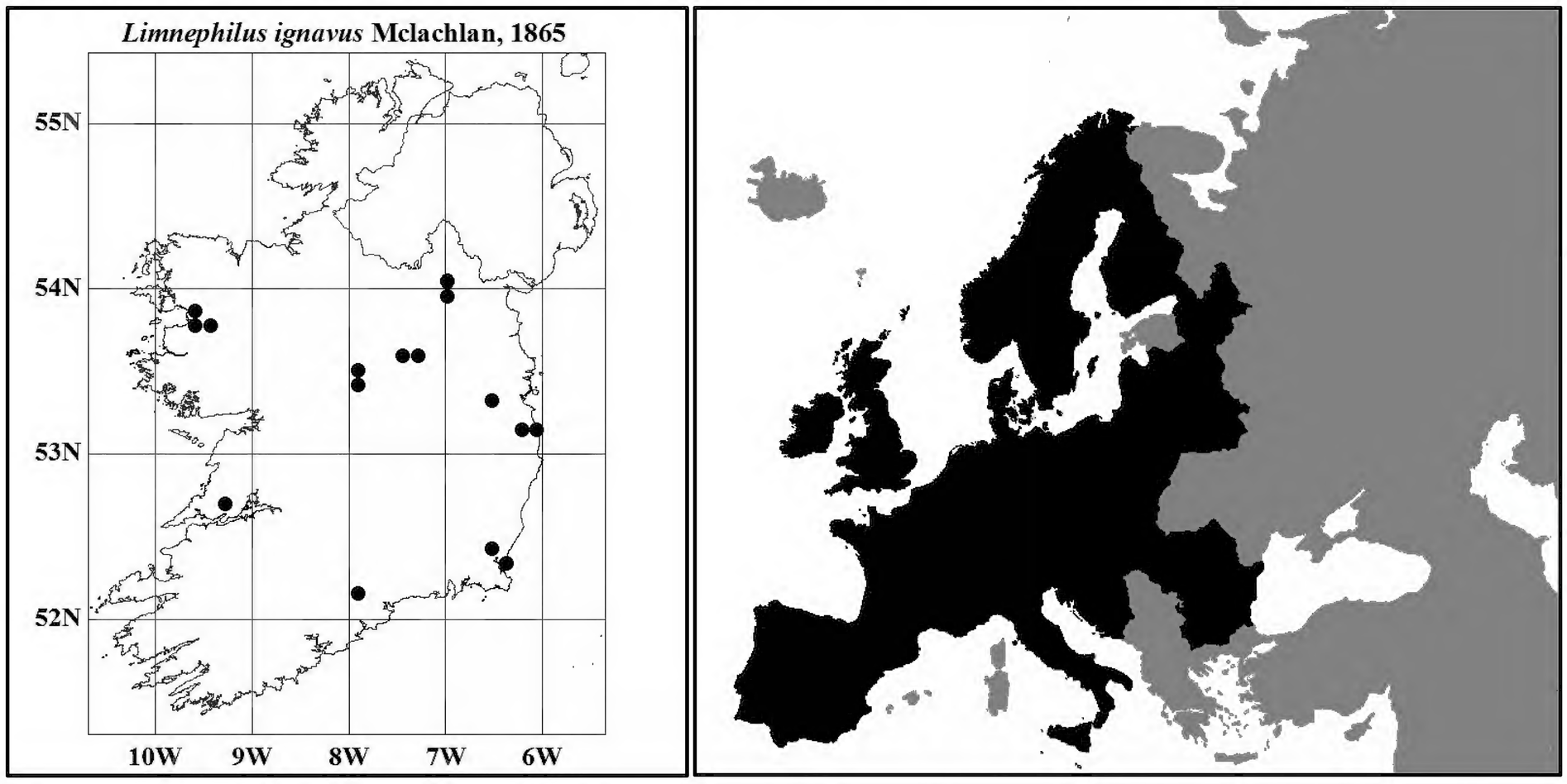
Unpublished records and voucher specimens

CLARE: Ballyeighter (R3493), ♀ 23 June 1970, at light, ECPC (NMS); **Lisdoonvarna** (M1000), ♂ 16 August 1969, ECPC, conf. JPOC (NMS). **CORK: Douglas R.** (W7169), MVT ♂ 25 August 1989, KGMB, det. JPOC; **Oysterhaven** (W6948), ♀ 27 July 1976, KGMB, det. JPOC (NMI); **Rahan** (W6398), marshy area near small river, light 4♂♂♀ June-September 1988, PS, det. JPOC; **Sherkin Island** (W0023), Drolain Point, ♂ 26 July & 2♂♂ 4 August 1981 (NMI), (W0124), Kilmoon, UVLT ♂ 19 June 1983, (W0225), Horseshoe Harbour, ♀♀ 8 June 1983, all SB, det. JPOC. **DONEGAL: Kilmacrenan** (C1420), ♀ 1 July, ♀ 3a July, ♀ 7 July, ♂ 9 July & ♂ 10 July 1891, [JJFXK] (HMAG). **DUBLIN: Dublin** [R. Dodder (O1328)], ♀ 9 June 1895, det. JPOC (NMI); **Howth** (O3038), adult July 1909, det. JPOC (NMI), (O2938), ♀ 30 June 1983, KGMB, det. JPOC (NMI); **Seapoint** (O2229), adult 23 August 1938, BPB (BMNH). **GALWAY: Hackett L.** (west side) (M3049), Lisdonagh, MT 3♂♂5♀♀ 12-26 June 2014, JC, det MG; **Oughterard** (M1343), adult 3-9 August 1926, MEM, conf. JPOC (BMNH). **KILDARE: Louisa Bridge** (N9936), *Chara* marsh, larvae (v) & flat shallow area of stream with *Chara*, larvae (v), 12 March 1984, IDW. **MAYO: Clare Island** (L6985), MT ♂♀ 11 June 1998, SF, conf. JPOC (NMI), (L7285), Kinnacorra, ♂ 3 September 2005, KGMB, conf. JPOC. **MONAGHAN: Emyvale** (H6843), ♂ 20-30 July [1885-6], conf. JPOC, Morton Coll. (NMS); **Glasslough** (H7241), ♀ August 1892, conf. JPOC, Morton Coll. (NMS). **OFFALY: Clorhane** (M9927), MVT 3♂♂ 12 August 1986, KGMB, det. JPOC; **Mongan Bog** (N0330), light-trap ♂ 5 July 1983, JAG, det. JPOC. **SLIGO: Mullaghmore** (G7155), adult 2 July 1950, N. E. Hickin (per IDW). **TIPPERARY: R. Suir** (S0424), Cahir, ♀ 3 August 1986, CM/OSF (SINMNH). **WATERFORD: Belle Lake** (S6605), ♂ 11 June 1991, JPOC; **Woodstown** (S6905), *Phragmites* bed, ♀ 2 July 1983, JPOC (NMI). **WESTMEATH: Athlone** (N0341) [R. Shannon], ♀ 13a July 1888, JJFXK, det. ECPC, conf. JPOC, Morton Coll. (NMS), ♂ 19 July 1888, JJFXK, conf. JPOC (NMS), ♂ 10 July 1888, JJFXK, conf. JPOC (NMI), ♂ 4 July &

♂ 20b July 1888, JFFXK, conf. JPOC (HMAG); **Coosan** (N0544), Creaghduff, Athlone, ♀ 17 August 1980, 2♂♂ 31 May 1981, JS, det. JPOC (NMI). **WICKLOW: Polluphucha (Blessington) Reservoir** (N9914), ♀ 18 August 1973, JPOC (NMI).

99. *Limnephilus ignavus* Mclachlan, 1865

FIGURES 235-236. Known Irish and European distributions of *Limnephilus ignavus*.



Limnephilus ignavus is a local Irish species. The cased larvae occur in flowing marshes and bog pools. The case is composed of butted and overlapped pieces of plant material. The larvae are mainly shredders. It is interesting to note that the species was taken twice at Edenvale in County Wexford but with an interval of over 100 years. The species is widespread in Europe.

Flight period: July–September (8 July–5 September). Barnard and Ross (2012) give the British flight period as May–June, August–October with a summer diapause.

Counties and 10km squares: Cavan, Clare, Kildare, Mayo, Waterford, Westmeath, Wexford, Wicklow (8/32). The species is known from sixteen 10km squares (16/1019).

Published records

King, 1888a as *Limnophilus* (**MAYO:** Ballin (L9987) and Mount Brown [Kinlooey] (M0381) Laoghs; Carrowbeg R. (M0084). **WESTMEATH:** Shannon near Athlone (N0341); Waterston [Waterstown] (N1045)). *King and Halbert, 1910* as *Limnophilus* (**MAYO:** Ballin (L9987) and Mount Brown [Kinlooey] (M0381) Loughs; Carrowbeg R. (M0084). **WATERFORD:** Cappoquin (X0999). **WESTMEATH:** Shannon near Athlone (N0341); Waterstown (N0946). **WEXFORD:** Edenvale (T0427) [R. Sow]; Rosslare [Rosslare Strand] (T0718)). *Halbert, 1912* as *Limnophilus ignaceus* (Hagen) McLach. (**MAYO:** Westport (L9984)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**IRELAND:** widespread but local). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Hannigan, Kelly-Quinn and O'Connor,*

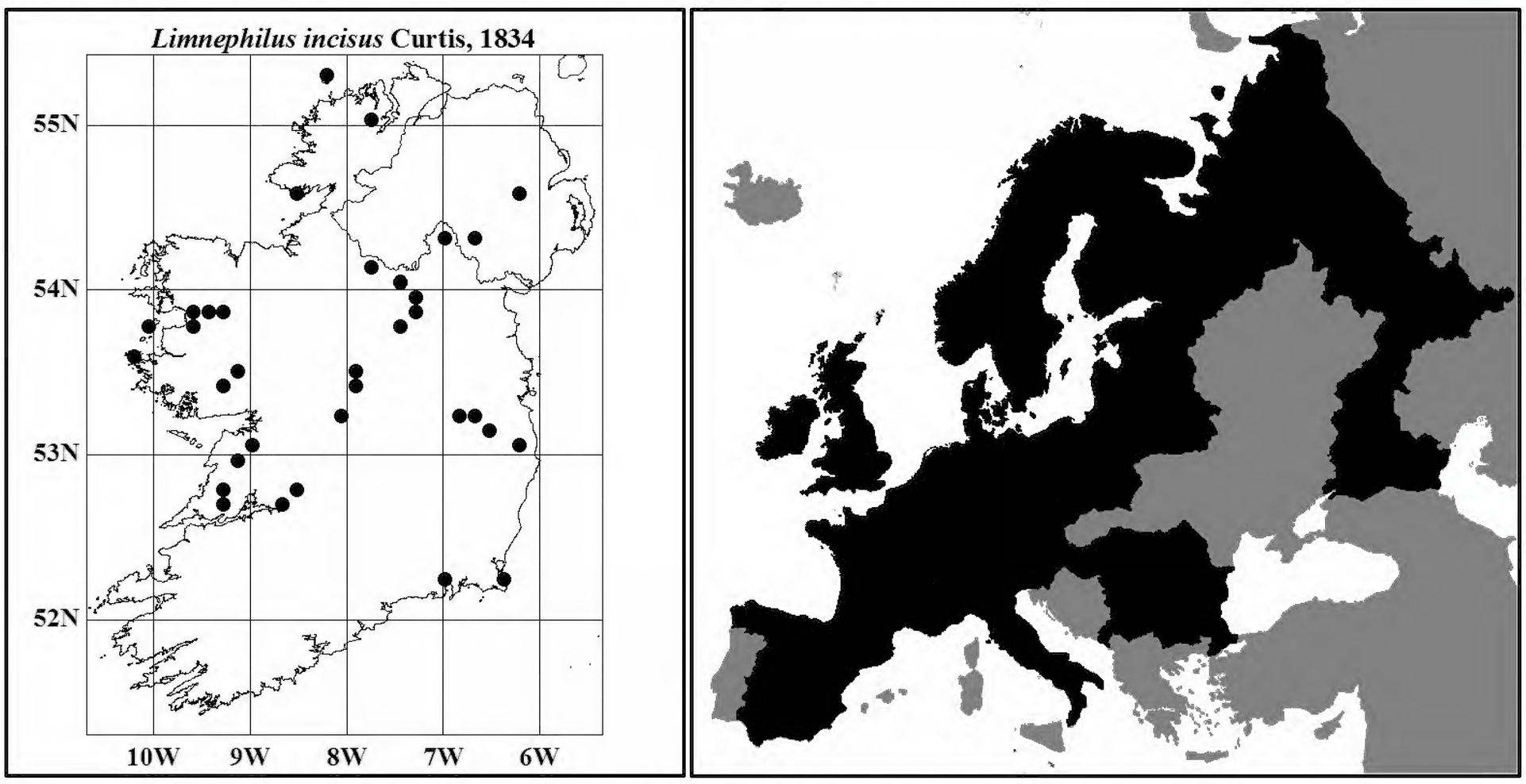
2009 (**CAVAN:** L. Sillan (H6907). **KILDARE:** Louisa Bridge (N9936). **MAYO**. **WESTMEATH:** Scragh Bog (N4259). **WATERFORD**. **WEXFORD**. **WICKLOW:** Kilmacanoge marsh (O2514); near the Sugar Loaf (O2312)). *Gammell, 2011* (**WEXFORD:** R. Sow, Edenvale (T0427) (♂ 5 September 2010)). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), pools). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

CAVAN: L. Sillan (H7106), LT ♀ 11 August 1972, JPOC (NMI). **CLARE: R. Cloon** (R1759), 2♂♂ 8 July 1973, JPOC. **KILDARE: Louisa Bridge** (N9936), in marsh, ♂♀ 2 August 1982, JPOC (NMI). **MAYO: Westport** (L9984), 2♂♂, JJFXK, conf. JPOC (NMI). **WATERFORD: Cappoquin** (X0999), ♀, conf. JPOC (NMI). **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂♂♀♀ 8 August 1888, JJFXK, conf. JPOC (BMNH, HMAG, NMS); **Scragh Bog** (N4357), ♂ 25 August 2008, EH, det. JPOC (NMI). **WEXFORD: Curracloe** (T1126), marsh, ♂ 27 July 2015, JPOC (NMI). **WICKLOW: Calary Lower** (O2312), in marsh with stagnant pools, ♀ 22 August 1988, JPOC (NMI); **Kilmacanogue Marsh** (O2514), alder marsh/weeds along stream, ♂ 15 August 1982, JPOC (NMI), (O2513), marsh flowing by main stream, with litter of *Salix*, *Alnus* etc., marsh marigold, *Iris* etc. emergent, larvae (iii, iv (most) & v) 11 March 1984, IDW.

100. *Limnephilus incisus* Curtis, 1834

FIGURES 237-238. Known Irish and European distributions of *Limnephilus incisus*.



Limnephilus incisus is widely distributed and the adults can be very common in marshy areas with emergent vegetation. Walking through an area often disturbs them and they then climb up vegetation where they can be readily observed. The cased larvae do not appear to like base-poor or acid water and this may explain the absence of records from south-west Ireland compare with the limestone areas of County Clare.

However, some populations must exist in limestone outcrops in the former area and await discovery there. The species is widespread in Europe.

Flight period: May–September (28 May–29 September). There is a summer diapause.

Counties and 10km squares: Antrim, Armagh, Cavan, Clare, Donegal, Galway, Kildare, Limerick, Mayo, Monaghan, Offaly, Waterford, Westmeath, Wexford, Wicklow (15/32). The species is known from thirty-four 10km squares (34/1019).

Published records

King, 1888a as *Colpotaulius* (**GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **MAYO:** Broad Laogh (L9992); Newport R. (L9994). **WESTMEATH:** Shannon (N0341)). *King and Halbert, 1910* as *Colpotaulius* (**ANTRIM:** Portmore near L. Neagh (J1169). **ARMAGH:** Armagh (H8745). **DONEGAL:** Fern (C1824) and Keel Loughs (C1524); Largy R. (G6675). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **MAYO:** Broad L. (L9992); Castlebar (M1188); Clare Island (L6985); Inishbofin (L5365); Newport R. (L9994). **MONAGHAN:** Emyvale (H6843). **WESTMEATH:** Shannon (N0341)). *Halbert, 1912* as *Colpotaulius* (**MAYO:** Castlebar (M1188); Clare Island (L6985); Newport (L9994); Westport (L9984)). *Botosaneanu and Malicky, 1978* as *Colpotaulius* (**IRELAND**). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**).

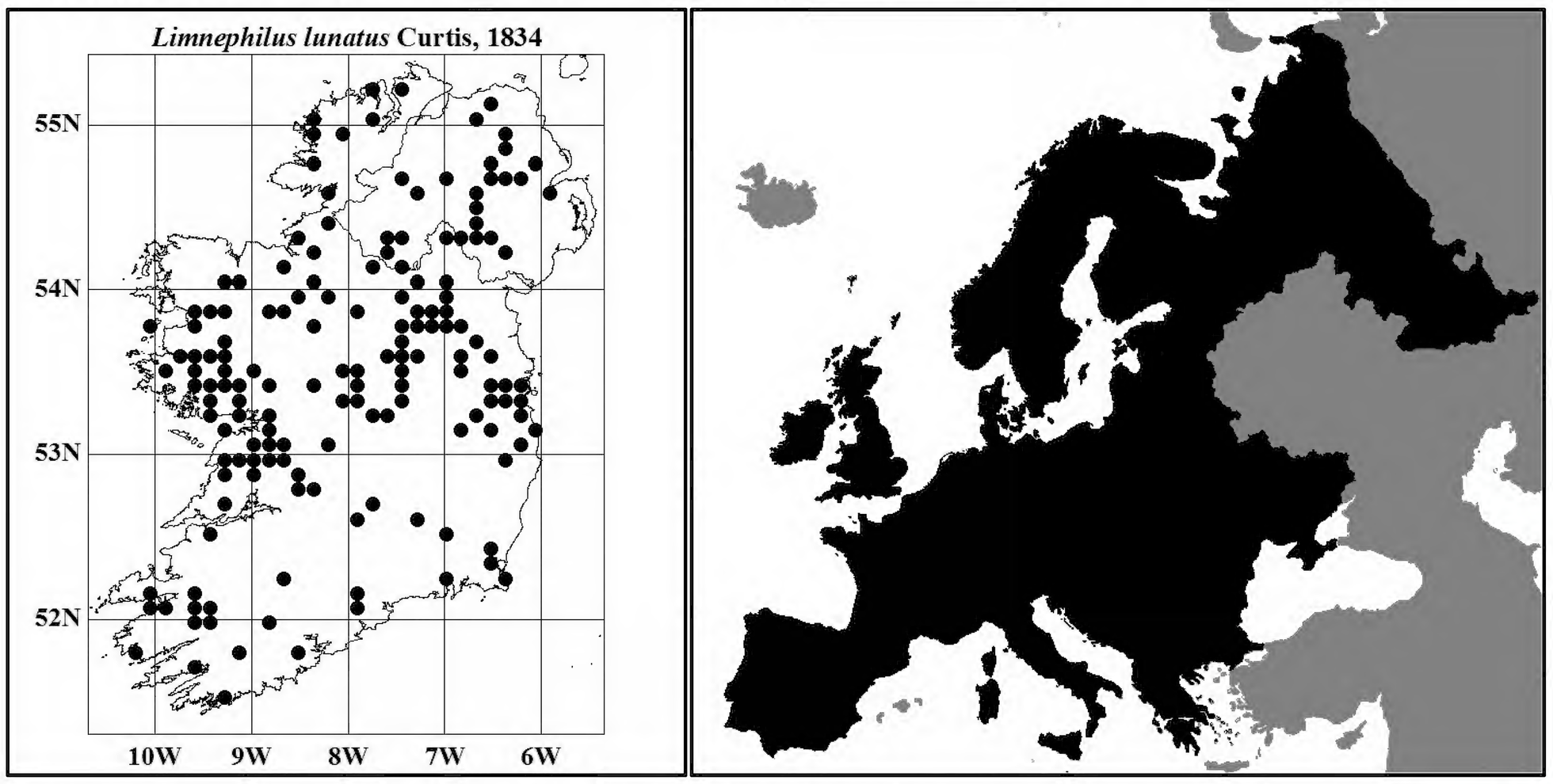
Unpublished records and voucher specimens

ANTRIM: L. Neagh (J1169), Portmore, adult August 1903, conf. JPOC (remains of specimen). **ARMAGH: Armagh** (H8745), adult 2 July 1891, WFJ, conf. JPOC (remains of specimen). **CAVAN: Drummany L.** (H3712), ♂ 4 August 1973, JPOC; **Levey L.** (H5002), ♀ 28 September 1973, JPOC; **L. Brackley** (H1921), ♂ 4 August 1973, JPOC; **L. Oughter** (H3308), 3♂♂2♀♀ 4 August 1973, JPOC (NMI); **L. Sheelin** (N4284), Summerville, adult 7 June 1947, JRH, (N4686), Crover, ♂ 17 June 1973, JPOC (NMI). **CLARE: Knockalough** (R1463), 4♂♂ 29 August 1973, JPOC; **L. Doo** (R1171), ♂ 29-30 August 1973, JPOC; **L. Inchiquin** (R2789), ♂ 10 July 1973, JPOC; **pond** (R6566), ♀ 12 July & 10♂♂4♀♀ 2 September 1973, JPOC. **DONEGAL: Largy Gardens** (G6675), 2 adults 9 July 1891, JJFXK (HMAG) (per EGH); **L. Fern** (C1824), 2 adults 20 July & 2 adults 1 August 1891, JJFXK (HMAG) (per EGH); **L. Keel** (C1524), 2 adults 23 July 1891, JJFXK (HMAG) (per EGH); **Tory Island** (B8446), ♂, det. JPOC (NMI). **GALWAY: Hackett L.** (west side) (M3049), Lisdonagh, MT 3♂♂♀ 12-26 June 2014, JC, det MG; **Roo Turlough** (M3802), ♂♂♀ 1 June 1996, limestone turlough, moss/*Litorella*, with marl deposit, dry soil, sieved, F. Butler/JAG, det. JPOC (NMI). **KILDARE: Robertstown** (N7825) [Grand Canal], 2♀♀ 3 July 1977, MDCW, det. JPOC (NMI); **Straffan** (N9326), fen/canal, 2♂♂♀ 28 May 1982, JPOC. **LIMERICK: Limerick** (R5757) [R. Shannon], adults 15 June 1913, CJM, det. JRAG (IM) (per IDW). **MAYO: Castlebar**

(M1188), ♂ 14 June 1909, JNH, det. KJM, conf. JPOC (NMI); **Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults June-September 1964, MK; **Clare Island** (L6985), 2♀♀ June 1909, JNH, det. KJM, conf. JPOC (NMI). **MONAGHAN: Emyvale** (H6843), ♂♂ 20-30 July [1885-6], det. KJM, conf. JPOC (NMS). **OFFALY: Bullock Island** (N0116) [R. Shannon], ♂ 20 June 1994, M. Morrisey, det. KGMB. **WATERFORD: Duncannon** (S7308), MT ♀ June 1982, JPOC. **WESTMEATH: L. Ree** (N0446), Coosan Point, ♀ 6 June 1977, JPOC (NMI). **WEXFORD: Rosslare Strand** (T0915), marsh near railway, ♂ 7 June 1976, JPOC (NMI). **WICKLOW: Roundwood** (O1903), 2 ♂♂♀ 29 September 1909, conf. JPOC (NMI); **Vallymount** (N9807), marsh, larvae 10 March 1978, JPOC, det. IDW (NMI); **Vartry Reservoir** (O1903), ♂♀ 21 July 1973, JPOC (NMI).

101. *Limnephilus lunatus* Curtis, 1834

FIGURES 239-240. Known Irish and European distributions of *Limnephilus lunatus*.



Limnephilus lunatus is a widely distributed and common Irish species. The distinctive adults have a pale crescent shaped mark at the apex of the forewing, always bordered by a dark line. They can be present in large numbers on water bodies. The cased larvae occur in fens, lakes, marshes, ponds, reservoirs, rivers, streams and turloughs. The case is variable in construction and the larvae are mainly shredders. *L. lunatus* is widespread in Europe.

Flight period: April–November (20 April–19/25 November). Adults were taken in a Malaise trap during the period 19 to 25 November. The situation appears to be the same as in Britain (Barnard and Ross, 2012) with those emerging in the spring probably having a summer diapause but most emerging in the autumn.

Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Leitrim, Longford, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone,

Waterford, Westmeath, Wexford, Wicklow (29/32). The species is known from 158 10km squares (158/1019).

Published records

McLachlan, 1885 as *Limnophilus* (**ANTRIM:** Belfast (J3473)). *King, 1888a* as *Limnophilus* (**ANTRIM:** Belfast (J3473). **ARMAGH:** Armagh (H8745). **DUBLIN:** Glasnevin (Tolka) (O1337); Lucan (O0335) [R. Liffey]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); near Ma'am (L9653). **KERRY:** Cloghereen (V9787); Denough [Deenagh] R. (V9792); Glena (V9386) [beside L. Leane]; Horses' Glen (V9981). **MAYO:** Ballin (L9987), Doogan (M0094) and Small Laoghs; Carrowbeg (M0084) and Newport (L9994) Rivers. **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan (N0446) [L. Ree]; Shannon (N0341); Twy [Breensford] R. (N0943)). *Morton, 1892b* as *Limnophilus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* as *Limnophilus* (**ANTRIM:** Belfast (J3473). **ARMAGH:** Churchill (H8960) [near R. Blackwater]; L. Gilly [lake near Loughgilly] (H9937), etc. **DONEGAL:** Ardara (G7390); Coolmore (G8566). **DUBLIN:** Glasnevin (R. Tolka) (O1337); Lucan (O0335) [R. Liffey]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Clonbrock (M7439) [Bunowen R.]; near Maam (L9653). **KERRY:** Cloghereen (V9787); Deenagh R. (V9792); Glena (V9386) [beside L. Leane]; Horse's Glen (V9981). **MAYO:** Ballin (L9987), Doogan (M0094) and Small Loughs; Carrowbeg (M0084) and Newport (L9994) Rivers. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WATERFORD:** Cappoquin (X0999); Dromana (X0994). **WESTMEATH:** Coosan (N0446) [L. Ree]; L. Ree (N0446); Shannon (N0341); Twy [Breensford] R. (N0943). **WICKLOW:** Roundwood (O1903)). *Halbert, 1912* as *Limnophilus* (**MAYO:** Clare Island (L6985); Newport (L9893); Westport (L9984)). *Mosely, 1930* as *Limnophilus* (**GALWAY:** Inverin (M0822). **MAYO:** L. Conn (G1516)). *Beirne, 1939* as *Limnophilus* (**DUBLIN:** Seapoint (O2229)). *Beirne, 1941* as *Limnophilus* (**DUBLIN:** Seapoint (O2229)). *Fahy, 1972a* (unsafe larval identification (Wallace, pers. comm.)). *Bracken and Murray, 1973* (**CORK:** L. Avaul (V9153)). *Moriarty, 1974* (unsafe larval identification (Wallace, pers. comm.)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *O'Connor and Norton, 1977* (**WESTMEATH:** Hare Island, L. Ree (N0446); L. Coosan (N0544)). *Speight, 1977* as *Limnophilus* (**ROSCOMMON:** Yew Pt. (N0146). **WESTMEATH:** Coosan Lake [Coosan (N0446)]). *Moriarty, 1978* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7007), (H6907), (H7106), (H6906). **WICKLOW:** L. Dan (O1502)). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Bracken, 1980b* (**DUBLIN:** R. Tolka (O0640), Mulhuddart Bridge. **MEATH:** R. Tolka (O0142), north of Dunboyne, (O0241), bridge upstream of Dunboyne tributary, (O0341), Clonee

Bridge). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9191), (V9490), (V9686); Muckross Lake (V9385), (V9685); Upper Lake [Killarney] (V9181)). *Murphy and Carter, 1984* (**ANTRIM:** L. Neagh (J1181), (J0485). **DERRY:** L. Neagh (H9485)). *Dauod, Bolger and Bracken, 1985a* (**WICKLOW:** Roundwood (Vartry) Reservoir (O2004)). *Dauod, Bolger and Bracken, 1986* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Dundrum Stream (O1627)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Bracken and Dauod, 1990* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *Carter and Murphy, 1993* (**IRELAND:** L. Neagh). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 13 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk; R. Laune (V8991), the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 30 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1673)). *Donohue et al., 2009* (**IRELAND**). *Porst and Irvine, 2009a* (**ROSCOMMON:** Brierfield turlough (M8176)). *Porst and Irvine, 2009b* (**GALWAY:** Caranavoodaun turlough (M4515); Termon turlough (R4097)). *Atalah et al., 2010* (**IRELAND**). *Gammell, 2011* (**WEXFORD:** R. Sow, Edenvale (T0427)). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), pools and hollows). *O'Connor and Nelson, 2012* (**IRELAND**). *Porst et al., 2012* (**GALWAY:** turloughs). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lake (R5088), 273m. **GALWAY:** lowland lake (M0927)). *Little and Free, 2013* (**CAVAN:** L. Sheelin (N4385); L. Sillan (H7106). **CLARE:** L. Graney (R5690). **CORK:** L. Allua (W1865). **DONEGAL:** Dunglow L. (B7811); Kincrum L. (C1843); L. Anure (B8216); L. Barra (B9312); L. Craghy (B7911); L. Fern (C1823); L. Naminn (C3941). **GALWAY:** Lettercraffroe [Lettererafroe] L. (M0537); L. Nafooey (L9759); L. Ardderry (L9945). **KERRY:** L. Caragh (V7190). **LEITRIM:** L. Bofin (N0489); L. Melvin (G8853). **MAYO:** Carrowkeribly [Ballycong] L. (G2611); Fin L. (L8465); L. Carra (M1871); L. Conn (G1810); L. Mask (M1060); Urlaur L. (M5188). **ROSCOMMON:** Cloonagh L. (M5487). **SLIGO:** Templehouse L. (G6117)). *O'Connor, Bond and O'Connor, 2013* (**FERMANAGH:** Upper L. Erne (H3524), (H2639); R. Erne (H2637)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Behy (V6589); R. Flesk (V9789); R. Galey (R0139)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Doagh R. (J2693); Dunnstown Burn (D0409); R. Braid (D1003); R. Bush (C9436); R. Main (Killagan Water) (D0513). **DERRY (LONDONDERRY):** R. Aghadowey (C8722); R. Moyola (H9590). **DOWN:** Newry R. (J0730). **FERMANAGH:** R. Colebrooke (H3744); R. Sillees (H2341). **TYRONE:** Ballynahatty Water (R. Owenreagh) (H4367); Fairywater (H3976); R. Ballinderry (H8376); R. Camowen (H4673)). *Kavanagh and Harrison, 2014* (**CORK:** drainage

ditch (W4881)). *Baars et al., 2014* (**IRELAND:** recorded in 1 of 12 upland peatland lakes). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** R. Erne (H2637)). *Anon., 2015a* (**CLARE:** L. Bunny (R3695); L. Gealain (R3195). **DUBLIN:** Liffey Valley Park, Waterstown (O0835); Phoenix Park (O1036), (O1234), (O1235). **GALWAY:** L. Corrib (M2926). **MAYO:** Cong (M1455); L. Mask (M0957). **OFFALY:** Silver R. (N1319). **ROSCOMMON:** L. Key Forest Park (G8404). **WICKLOW:** Wicklow Mountains National Park (T1196)).

Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), adults 1885, CGB (BMNH). **ARMAGH: Armagh** (H8745), ♂ 14 September 1889, [WFJ], conf. JPOC (NMI); **Churchill** (H8960) [near R. Blackwater], ♀ 16 August 1889, [WFJ], conf. JPOC (NMI). **CARLOW: R. Barrow** (S7238), St Mullins, ♂ 20 April & ♀ 24 April 1992, ♂ 15 August 1994, ♀ 20 May 2012, JPOC/MAOC. **CAVAN: Corrakane L.** (H4000), small lake, LT ♂ 4-5 August & 5♂♂4♀♀ 30 September 1973, JPOC; **L. Brackley** (H1921), ♂ 28 September 1973, JPOC; **L. Cuilcagh** (N6389), ♂ 27 September 1972, 2 larvae exposed rocky shore, 29 March 1973, JPOC; **L. Mullagh** (N6785), ♂ 10 August 1972, 34 larvae exposed rocky shore, 4 larvae sheltered rocky shore & 10 larvae reed bed, 3 April 1973, JPOC; **L. Ramor** (N5987), 5♂♂ 10 August 1972, JPOC, (N6087), 4 larvae & ♂ pupa 2 August 1973, JPOC, larva 1996/1997, JW, (N6186), 2♀♀ 27 September 1973, JPOC; **L. Sheelin** (N4686), adult 26 August 1946, JRH, IETS 2♀♀ 10 September & ♀ 17 September 1971, IFT, det. JPOC, (N4686), Crover, ♂ 6 August 1990, ♀ 12 September 1991, JPOC, (N4183), Kelly's Bay, larva 8 March & 2 larvae 7 May 1975, KFW, det. JPOC, Kilnahard Bay, 3 larvae 8 May 1975, KFW, det. JPOC, IETS 1973/1974: (N4384), Kilnahard Bay, 41 adults, (N4183), Kelly's Bay, 3 adults, (N4685), Crover, 38 adults, (N4586), near Arley Point, 10 adults, PG; **L. Sillan** (H6906), ♂♂♀♀ 11 August 1972 (NMI), light 46♂♂55♀♀ 30 August & ♀ 3 October 1972, 72 larvae exposed rocky shore, 23 larvae sheltered rocky shore and 28 larvae reed bed, 26 March 1973, (H7007), 2♂♂ August 1971, light ♂ 30 August & 2♂♂5♀♀ 30-31 September 1972, LT 2♂♂♀ 28-29 September 1972, (H7106), 7♂♂2♀♀ 9 August, 7♂♂5♀♀ 11 August & 18♂♂17♀♀ 1 September 1972, JPOC; **L. Tacker** (H6908), 5♂♂8♀♀ 1 September 1972, JPOC; **Mount Nugent R.** [Inny R.] (N4986), larva 5 August 1973, JPOC; **pond** (Drunad L.) (H7102), 2 larvae 1 August 1973, JPOC; **R. Annalee** (H6806), above L. Sillan, 2♀♀ 31 September 1972, (H6810), ♂ 1 September 1972, ♀ 27 September 1973, (H6808), 5♀♀ 30 September 1972, (H4511), 4♀♀ 3 October 1972, ♂2♀♀ 27-28 September 1973, JPOC; **R. Barora** (N6893), 2♀♀ 31 August 1972, (N6889), 3♀♀ 4 October 1972, all JPOC; **R. Blackwater** (N6283), exiting L. Ramor, 2♀♀ 27 September 1973, JPOC. **CLARE: Dromore Lake** (R3586), larvae 1996/1997, JW; **Knockalough** (R1463), ♂3♀♀ 29 August & ♀ 18 October 1973, JPOC; **Lickeen Lake** (R1891), larvae 1996/1997, JW; **L. Atedaun** (R2989), ♂♀ 1 September 1973, JPOC; **L. Bunny** (R3796), ♂3♀♀ 31 August 1973, JPOC; **L. Cullaun** (R3290), larva 1996/1997, JW; **L. Derg** (R6979), LT

126♂♂91♀♀ 2-3 September 1973, JPOC; **L. Graney** (R5691), ♂♀ 3 September 1973, JPOC; **L. Inchiquin** (R2789), LT 6♂♂ 31 August-1 September 1973, JPOC, larva 1996/1997, JW; **L. Lickeen** (R1891), 2 larvae 10 July 1973, (R1691), 2♂♂♀ 31 August 1973, JPOC; **L. Looscaunagh** (V8879), ♀ 11 October 1972, JPOC; **L. Moghna** (R1384), 2♂♂2♀♀ 30 August 1973, JPOC; **pond** (R6566), ♂ 2 September 1973, JPOC; **R. Bleach** (R6096), LT ♀ 3-4 September 1973, JPOC; **R. Caher** (M1608), Burren, LT 6♂♂2♀♀ 30-31 August 1973, JPOC; **R. Fergus** (R3478), ♂ 2 September 1973 (NMI), (R3489), larva 11 July 1973, (R2591), 3♂♂2♀♀ 1 September 1973, (R2688), below L. Inchiquin, ♀ 1 September 1973, JPOC; **R. Shannon** (R6767), O'Brien's Bridge, 3♂♂2♀♀ 3 September 1973, JPOC; **stream** (R2592), near Corofin, 4 larvae 10 July 1973, JPOC; **stream** (V8979), entering L. Looscaunagh, 2♀♀ 11 October 1972, JPOC. **CORK: Bealnamorrive** (W3976), Leades House, MVLT ♂ 28 August 1981, KGMB, det. JPOC (NMI); **Buttevant** (R5408) [R. Awbeg], MVLT ♂♀ 17 August 1995, KGMB; **Liss Ard House** (W1331), south of Skibbereen, MVLT ♂♀ 24 August 1991, KGMB, det. JPOC; **L. Avaul** (V9153), adults August-October 1969, MK; **Riverstick** (W6659), MVLT ♀ 10 June 1986, KGMB. **DONEGAL: Ardara** (G7390) [Owntocker R.], ♀ 22 July 1892, WFJ, conf. JPOC (NMI); **Coolmore** (G8566), ♀ July 1894, [WFJ], conf. JPOC (NMI). **DUBLIN: Dublin**, adult 1861, CGB (BMNH); **Dundrum** (O1727), ♂, J. Scharff, det. JPOC (NMI); **Malahide Castle** (O2245), ♀ 6 October 1985, JPOC/MAOC, det. JPOC (NMI); **R. Liffey** (O0335), Lucan, 5 October 1946, JRH, (O0235), Lucan Demesne, 2♀♀ 18 September 1973, JPOC, (O0735), Strawberry Beds, among debris of emergent vegetation, larvae (v) and tufa stream, lower region by R. Liffey, flat, larvae (v), 12 March 1984, IDW; **R. Tolka** (O0938), 3 larvae 7 July 1972, AFF, det. JPOC; **Royal Canal** (O0438), near Clonsilla, ♂♀ 28 September 1986, JPOC/MAOC, det. JPOC; **Seapoint** (O2229), adults 20 September 1938, BPB (BMNH). **FERMANAGH: Crom Estate** (H3524), [Upper L. Erne], LT ♂2♀♀ 24 September 2013, KGMB, det. JPOC; **Mill L.** (H2438), near Bellanaleck, LT ♂ 1 September 2015, JPOC/MAOC, det. JPOC; **R. Erne** (H2637), Cloonatrig, Bellanaleck, LT 3♂♂ 9-10 October 2013 (NMI), LT 7♂♂2♀♀ 2 September 2015, JPOC/MAOC, det. JPOC; **Upper L. Erne** (H2639), Bellanaleck Quay, ♀ 10 October 2013, JPOC/MAOC, det. JPOC (NMI), (H2731), Knockninny Quay, 3♂♂ 2 September 2015, JPOC/MAOC, det. JPOC. **GALWAY: Connemara National Park** (L7157), RLT ♂ 18 August 1982, COK, at light 3♂♂ 17 September 1982, NK, det. JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 26 May 1984, PB, det. JPOC; **Inver** (L9139), adult 28 September 1946, JRH; **Inverin** (M0822), adults 26 August-6 September 1929, MEM (BMNH); **Loch an Droichid outflow** (M0542), Derryerglinna, LT ♀ 13 September 2014, MG/CC, det. MG; **L. Ballyquirke** (M2331), larva 1996/1997, JW; **L. Corrib** (M1745), adults July-October 1964, MK, (M2531), Hurney's Point [near Moycullen], MVLT 3♀♀ 12 September, ♂ 14 September, 2♂♂2♀♀ 16 September & ♂3♀♀ 25 September 2003, (M2642), Keekill,

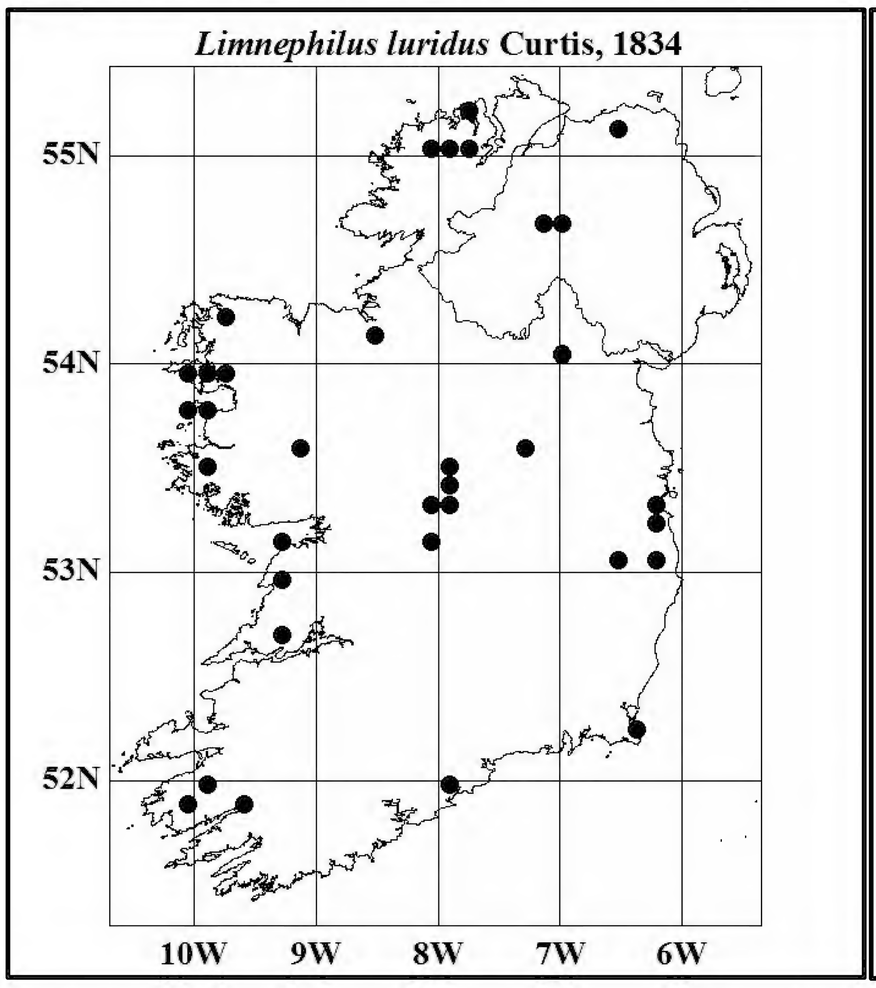
LTS 8♂♂11♀♀ 2 August 2003, KGMB, det. JPOC, (M1146), Upper, ♂ 26 August 1980, BC, det. JPOC (NMI), (M2341), Knockferry, LT ♂ 21 August 2014, MG/CC, det. MG; **L. Cutra** (R4698), MVLTS ♂♀ 23 June & ♂♂♀♀ 30 August 1996, KGMB, det. JPOC; **L. Lettercraffroe** (M0537), larvae 1996/1997, JW; **Oughterard** (M1343), adult 3-9 August 1926, MEM (BMNH); **R. Clare** (M4049), ♂ pupa 22 August 1972, (M4341), ♂ pupa 22 August 1972, AFF, det. JPOC; **R. Corrib** (M2926), NUI Galway, 4 larvae 7 March 2011, D. McHugh, conf. MG; **R. Shannon** (M8705), u/s of Portumna, 11 larvae 12 July 1973, AFF, det. JPOC. **KERRY: Blue Pool** (V9786), R. Cloghereen, 2♀♀ 30 August 1987, JPOC; **exit stream of Cloghereen** (V9787), June 1974, IDW; **Killarney**, adult 1a August 1887, JJFXK, conf. JPOC (NMI); **Killarney lakes**, trout stomachs, 17 larvae, UCD, det. JPOC; **L. Doon** [L. Slat] (Q6107), ♂ 28 August 1973, JPOC; **L. Lauscaunagh** (V8879), stream exiting from, ♀♀ 11 October 1972, JPOC; **L. Leane**, open lake, ♂ 30 October 1973, 26 larvae reed bed & 24 larvae reed bed (charcoal), 10 April 1973, (V9686), Castlelough Bay, IET ♂ 25 August 1973, (V9188), O'Sullivan's Cascade shore, 2 larvae 17 April & ♂ 13 October 1973, JPOC, (V9291), Golf Course, ♀ 15 September 1981, JPOC; **Muckross Lake** (V9685), 45 larvae, reed bed, 10 April & 4 larvae sheltered rocky shore, 13 April 1973, (V9685), boat house, LT ♂ 17-18 October 1973, JPOC, Goleen, larvae, June 1974, IDW; **O'Sullivan's Cascade** (V9188), ♀ 12 October 1973, JPOC; **stream** (Q8905), entering R. Maine, 3 larvae 7 July 1973, JPOC. **KILDARE: Grand Canal** (N9326), Straffan, ♀ 14 November 1981, JPOC; **Louisa Bridge** (N9936), ponds, larvae (iii-v) 12 March 1984, IDW; **Naas** (N8919), McAuley Place, indoors in building beside stream, ♀ 7 October 2014, JPOC; **Newbridge (Pollardstown) Fen** (N7715), ♂♂♀♀ 8 September 1991, JPOC. **KILKENNY: R. Nore** (S5055), Kilkenny, ♀ September 1987, BMOH, det. JPOC. **LONGFORD: Royal Canal** (N2360), Abbeysrule, larvae 21 June 1983, RM, det. BW (per IDW). **MAYO: Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults August-October 1964, MK; **Clare Island** (L6985), ♂♀ September 1910, WFJ, det. JPOC (NMI), larva, peaty lake, SF, det. IDW, ♂♀ 10 August 1998, SF, conf. JPOC (NMI); **Cong** (M1455) [L. Corrib], adult 28 September 1940, W. D. Hincks, det IDW (MANM) (per IDW); **L. Carra** (M1673), adults August-October 1964, MK; **L. Conn** (G1516), adult 16-23 September 1929, MEM (BMNH), adults August-October 1964, MK; **L. Mask** (M1259), (M1465), adults August-October 1964, MK; **L. Moher** (L9777), larvae 1996/1997, JW. **MEATH: Ashbourne** (O0459), ♀ light 17 October 1973, DAM, det. JPOC (NMI); **L. Sheelin** (N4582), Gortport, ♂♂♀♀ 22 September 1973, JPOC; **R. Blackwater** (N7377), west of Kells, ♂ 1 August 1986, CM/OSF (SINMNH); **R. Boyne** (N8057), larvae 5 September 1988, (N8868), larvae 5 September 1988, DAG/JML, det. JML, (N8056), near Trim, larva 5 September 1988, MFOG, det. JPOC. **OFFALY: Clorhane** (M9827), ♂♂ 19 September 1996 (NMI), (M9927), MVT 3♂♂ 12 August 1986, KGMB, det. JPOC; **Grand Canal** (N3928), branch, larvae 23 June 1983, RM, det. BW (per IDW); **Mongan Bog** (N0330), ♂ 24

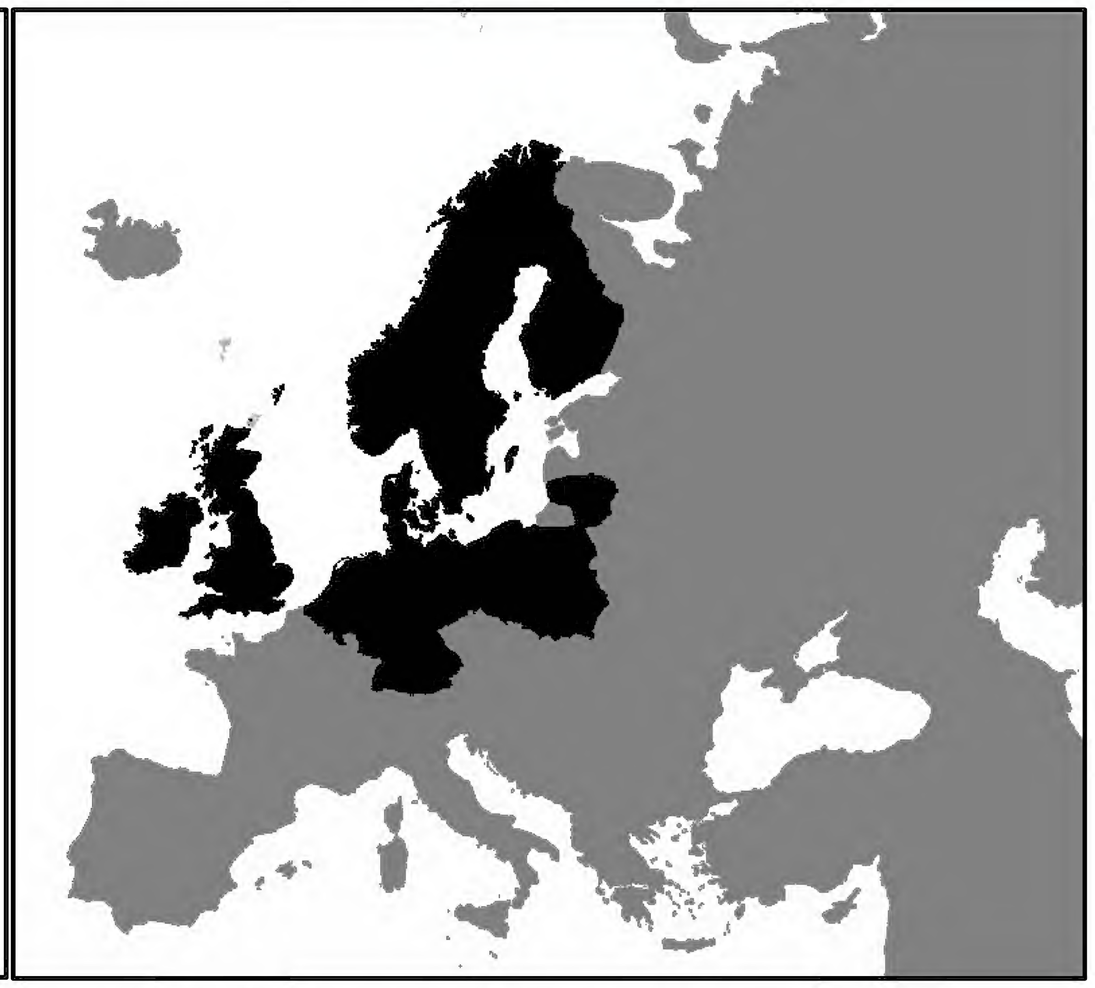
August 1983, JAG, det. JPOC; **Pallas Lake** (N2719), larvae 22 June 1983, RM, det. BW (per IDW). **ROSCOMMON: Athlone** (N0243) [R. Shannon], adults 20 August 1958, PHW (BMNH); **L. Key** (G8205), larva 18 July 1972, AFF, det. JPOC; **L. Ree** (N0245), Yellow Island, adults 22 August 1958, PHW (BMNH); **R. Shannon** (N0339), downstream of Athlone, 2 larvae 13 July 1972, (M9830), 2 larvae 13 July 1972, AFF, det. JPOC. **SLIGO: L. Arrow** (G7711), adults August-October 1964, MK; **L. Gara North** (G7101), larva 1996/1997, JW; **L. Gill** (G7232), lake outflow, larvae 20 July 1989, DAG/JML, det. JML; **Rahaberna** (G6940), ♂♂ 8 August, 22 August & 30 August 1988, DCFC, det. JPOC. **TIPPERARY: Breagagh R.** (S1458), larvae 10 March 1992, DAG/JML, det. JML; **Brownstown R.** (S1665), larvae 10 March 1992, DAG/JML, det. JML; **Kilmastulla R.** (R8072), (R8071), (R7169), (R6867), larvae/adults 1976-1977, MAOC; **R. Drish** (S2163), 6 July 1992, DAG/JML, det. JML; **R. Suir** (S1255), larvae 22 May 1992, DAG/JML, det. JML. **TYRONE: Ballinderry R.** (H6980), Dunnamore Walk, LT ♂ 20 September 2014, JPOC/MAOC, det. JPOC; **Moy** (H8356), MT ♂ 19-25 November 1984, MB, det. JPOC (NMI). **WESTMEATH: Athlone** (N0341) [R. Shannon], adult 4 July 1888, [JJFXK] (BMNH), ♀ 28 June & ♂ 29 June 1888, 2♂♂ 4 July & ♀ 11 July 1888, JJFXK, conf. JPOC (NMI); **Ballynafid Lake** (N4160), larvae 20 June 1983, RM, det. BW (per IDW); **Coosan** (N0544), Creaghduff, MVLT 2♂♂♀ 17 August 1980, JS, det. JPOC; **L. Derravaragh** (N4663), adults August-October 1964, MK, IETS 1973/1974: (N4169), Coolure Bay, 4 adults, (N3968), bay near R. Inny, 9 adults, PG; **L. Ennell** (N3947), 29 larvae reed bed, 15 May 1973, JPOC, IETS 1973/1974: (N4147), Goslin Island, 3 adults, (N3944), Robin's own shore, adult, (N3844), mid lake off Robin's own shore, 2 adults, PG; **L. Owel** (N4156), larvae 1996/1997, JW; **L. Sheelin** (N4381), off Goreport Point, IETS 1973/1974 6 adults, PG; **ponds** (two) (N3854), west of Mullingar, larvae 20 June 1983, RM, det. BW (per IDW); **Royal Canal** (N3652), at Shanonagh Bridge, larvae 23 June 1983, RM, det. BW (per IDW). **WEXFORD: Duncannon** (S7308), at light ♀ 9 June 1982, JPOC; **near Whitestown** (T0517)), ponds, 3 larvae 9 June 1978, JPOC/MAOC, det. JPOC; **R. Boro** (S9636), stream entering river at Soldiers Hole, 3 larvae 23 July 2015, JPOC/MAOC, det. JPOC; **Stoneyford** (T1009) [stream], at light ♀ 5 September 1980, JPOC (NMI). **WICKLOW: Glencullen R.** (O1919), ♂ 27 July 1973, JPOC; **Kilmacanogue** (O2514), alder marsh, ♀ 15 August 1982, JPOC (NMI); **L. Dan** (O1502), 2♂♂ 24 August 1972, 4♂♂5♀♀ 19 August 1973, JPOC, larvae 1996/1997, JW, (O1504), ♂ 16 August 1972, 3 larvae exposed rocky shore & 8 larvae reed bed, 27 April 1973, JPOC; **near Oldcourt** (O0214), stream by hedge in field with *Callitriche* and watercress, larvae (iii, iv, v) abundant 10 March 1984, IDW; **Pollaphuca (Blessington) Reservoir** (N9612), larva 24 July 1974, JPOC, (N9914), 3♂♂6♀♀ 18 August 1973, JPOC (NMI); **Roundwood** (O1903), ♀ 29 September & ♀ 1 October 1909, conf. JPOC (NMI); **Russelltown Park** (N9611), stream feeding lake, upper section by old hedge of mature *Fagus* and *Quercus* in field, slow, muddy and weedy,

larvae (iii, iv) 10 March 1984, IDW; **Upper Lake, Glendalough** (T1096), 2♂♂ 19 August 1973, JPOC; **Vartry Reservoir** (O1904), 4♂♂♀ 4 August 1972, (O2004), ♀ 24 August 1972, (O1905), ♂ 1 August 1972, (O1903), 18♂♂12♀♀ 19-20 August 1973, JPOC.

102. *Limnephilus luridus* Curtis, 1834

FIGURES 241-242. Known Irish and European distributions of *Limnephilus luridus*.





Limnephilus luridus is widely distributed in Ireland and adults are often taken in light and Malaise traps. The cased larvae occur in water bodies which dry up or diminish during the summer. These include the callows along rivers such as the Shannon, pools/puddles in woodland and pools on bogs. The case is composed of butted and overlapped pieces of plant material. It looks a little like a barrel when fully formed. The larvae are mainly shredders. The species has a limited mainly northern European distribution.

Flight period: May–August (15/25 May–19 August). An adult was taken during the period 20 to 30 May. Barnard and Ross (2012) give the British flight period as May–November with a short summer diapause.

Counties and 10km squares: Antrim, Clare, Cork, Donegal, Dublin, Galway, Kerry, Mayo, Monaghan, Offaly, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (17/32). The species is known from thirty-five 10km squares (35/1019).

Published records

King, 1888a as *Limnophilus* (**SLIGO:** Mackree [Markree] Castle (G6925). **WESTMEATH:** Coosan (N0446) [L. Ree]; Shannon (N0341)). *King and Halbert, 1910* as *Limnophilus* (**DONEGAL:** Clonkillybeg [L.] (C1219); L. Keel (C1524); R. Lennan [Leannan] (C1318); Cottian (C1318) [Leannan R.]. **SLIGO:** Markree Castle (G6925) [Unshin R.]. **WESTMEATH:** Coosan (N0446) [L. Ree]; Shannon (N0341)). *Halbert, 1912* as *Limnophilus* (**MAYO:** Achill Island (F6405); Louisburgh (L8080)).

Beirne, 1939 as *Limnophilus* (**DUBLIN:** Seapoint (O2229)). *Beirne, 1941* as *Limnophilus* (**DUBLIN:** Seapoint (O2229)). *Speight, 1977* as *Limnophilus* (**WESTMEATH:** Coosan Lake [Coosan (N0446)]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**WICKLOW:** L. Dan (O1502), adults). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7281)). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Atalah et al., 2010* as *Limnephilus luricus* (**IRELAND**). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), pools). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** L. Derriana stream (V6274); R. Inny (V5572)). *O'Connor, Bond and O'Connor, 2014* (**ANTRIM:** Garry Bog (C9430). **TYRONE:** Aghaboy (H5581); Creggan (H2678)).

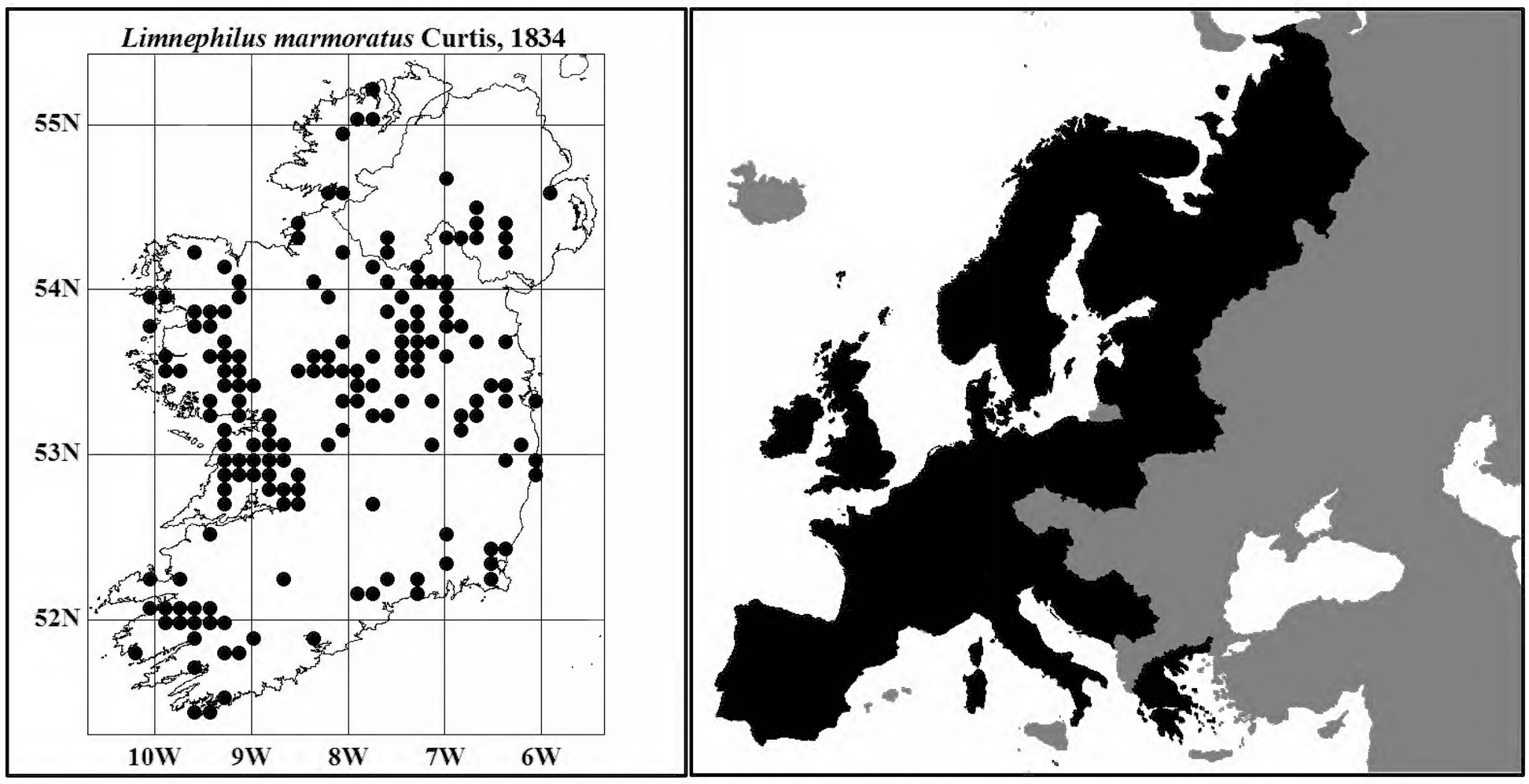
Unpublished records and voucher specimens

ANTRIM: Garry Bog (C9430), LT ♂3♀♀ 17 June 2014, KGMB, det. JPOC (NMI). **CLARE: Kilshanny** (R1293) [Aughyvackeen R.], hedgerows, ♀ 3 June 1992, JPOC; **Knockalough** (R1463), ♀ 9 July 1973, JPOC; **R. Caher** (M1608), Burren, adult 15-25 May 1961, JDB (BMNH). **CORK: Tourig Estuary** (X0880), MVLT ♂ 4 August 1995, KGMB, det. JPOC. **DONEGAL: Glenveagh National Park** (C0018), near Owenacoo R., MT 9♂♂6♀♀ 20-30 May 1998, MCDS, det. JPOC, (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT ♀ 10-30 July 1998, MCDS, det. JPOC; **Kilmacrenan** (C1420), adults 1 July & 13 July 1891, [JJFXK], det. FCJF (HMAG); **Kindrum** [L.] (C1843), beside the sea, LT ♂♀ 16 July 1980, JS, det. JPOC (NMI). **GALWAY: Connemara National Park** (L7157), acidophilous woodland, MTS 7♂♂7♀♀ 19 May-8 June 1994, ♂2♀♀ 30 June-20 July 1994, MCDS, det. JPOC. **KERRY: Cloghan's Hill** (M3058) [Black R.], adult 11 July 1972, L. S. Larch (MANM) (per IDW); **Kenmare** (V9471), adult 26-30 May 1961, JDB (BMNH), adult 25 May 1961, ECPC (per IDW); **stream** (V6274), near Derriana L., LT ♂♂♀♀ 1-13 July 1979, JPOC (NMI). **MAYO: Clare Island** (L6985), MT ♂♀ 11 June 1998, SF, conf. JPOC (NMI); **Glenamoy Bog** (F9033), water traps 7♂♂7♀♀ 16 May-26 June 1972, CD, det. JPOC (NMI); **Louisburg** (L8080), 500ft [152m], adult 19 July 1910, CJM, det. JRAG (IM) (per IDW); **Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT 20♂♂20♀♀ 30 May-20 June 1997, MCDS, det. JPOC; **Sraheen L.** (F7100) [Achill Island], ♂♀ 12 June 1909, JNH, conf. JPOC (NMI). **MONAGHAN: L. Bawn** (H7110) [Black L.], adult 11 July 1965, JRH. **OFFALY: Mongan Bog** (N0330), LT 37♂♂9♀♀ 5 August 1983, JAG, det. JPOC (NMI); **R. Shannon** (N0030), Clonmacnoise, MT ♂♂♀♀ 1993, MCDS, det. JPOC. **TIPPERARY: Redwood Bog** (M9611), MVLT ♂♂♀♀ 19 June 1986, KGMB, det. JPOC (NMI); **R. Little Brosna** (M9710), MT ♂♂♀♀ 1993, MCDS, det. JPOC. **TYRONE: Aghaboy** (H5581), LT ♂2♀♀ 14 June 2014, KGMB, det. JPOC; **Creggan** (H6278), LT ♂ 14 June 2014, KGMB, det. JPOC. **WATERFORD: Tourig**

Estate (X0880) [Tourig R.], ♂ 4 August 1995, KGMB, det. JPOC. **WESTMEATH: All Saints Bog** (N0111), 2♂♂♀ 23 May, 3♀♀ 12 June & ♀ 10 July 2008, MN, det. JPOC; **Athlone** (N0341) [R. Shannon], 28 June, 16 August & 18 August 1888, [JJFXK], det. FCJF (HMAG); **Coosan** (N0544), MVLT ♂♀ 31 May 1981, JS, det. JPOC (NMI). **WEXFORD: Stoneyford** (T1009) [stream], at light, ♀ 8 June 1986, JPOC. **WICKLOW: King's R.** (O0401), LT 2♂♂10♀♀ 22-23 July 1973, JPOC; **L. Dan** (O1502), ♀ June 1971, ♀ 1 August 1972 (NMI); (O1504), ♂ LT 21-22 June 1973, (O1503), ♀ 1 August 1972, JPOC; **R. Glencullen** (O1919), LT ♂ 18-19 August 1973, JPOC.

103. *Limnephilus marmoratus* Curtis, 1834

FIGURES 243-244. Known Irish and European distributions of *Limnephilus marmoratus*.



Limnephilus marmoratus is a widely distributed and common Irish species. The cased larvae live in lakes, ponds, reservoirs, rivers, turloughs, pools and hollows in bogs, peat cuttings and ditches. Some habitats dry out in the summer. The omnivorous larvae are mainly shredders. The older larvae often have complex cases using plant material such as stems arranged in a criss-cross fashion, obliquely to the axis of the case. The species is widespread in Europe.

Flight period: June–October (4/6 June–26 October). There is a summer diapause.

Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Laois, Leitrim, Limerick, Longford, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (29/32). The species is known from 168 10km squares (168/1019).

Published records

Morton, 1883 as *Limnophilus* (**MONAGHAN:** Glasslough neighbourhood (H7241)).

McLachlan, 1885 as *Limnophilus* (**ANTRIM:** Belfast (J3473)). *King, 1888a* as *Limnophilus* (**ANTRIM:** Belfast (J3473). **ARMAGH:** Armagh (H8745). **DUBLIN:** Glasnevin (Tolka) (O1337). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Salthill (M2924). **KERRY:** Cloghereen (V9787); Coppagh Glen (W0382); Dinish (V9385); Gap of Dunloe (V8787); Kilbrean Laogh (W0093); Ross Castle (V9488). **MAYO:** Ballin (L9987), Bleachyard (L9994), Broad (L9992), Brocka, Carrowbeg (L9295), Doogan (M0094), Kip (M0880), Knappagh [Knappaghbeg] (M0080), Prospect (L9581) and Small Laoghs; Carrowbeg (M0084) and Newport (L9994) Rivers. **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Killinure (N0745); Shannon (N0341); Waterston [Waterstown] (N1045)). *King and Halbert, 1910* as *Limnophilus* (**ANTRIM:** Belfast (J3473). **ARMAGH:** Churchill (H8960) [near R. Blackwater]; Mullinure (H8846), etc. **DONEGAL:** Coolmore (G8566); Coxtown (G9271); Kilmacrennan district (C1420) [Leannan R.]. **DUBLIN:** Glasnevin, R. Tolka (O1337). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Cong (M1455) [L. Corrib]; Salthill (M2924). **KERRY:** Cloghereen (V9787); Coppagh Glen (W0382); Dinish (V9385); Gap of Dunloe (V8787); Kilbrean L. (W0093); Loo Bridge (W0881) [on the upper R. Flesk]; Ross Castle (V9488). **MAYO:** Newport (L9893) and Westport (L9984) districts. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **OFFALY** [King's County]**:** Edenderry (N6332). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **SLIGO:** Rosses Point (G6440). **WATERFORD:** between Cappoquin (X0999) and Lismore (X0498); Cappagh L. (X1996). **WESTMEATH:** Killinure (N0745); Shannon (N0341); Waterstown (N0946). **WEXFORD:** Edenvale (T0427) [R. Sow]; Johnstown Castle (T0216) [small lakes]; Killurin (S9726) [R. Slaney]). *Halbert, 1912* as *Limnophilus* (**MAYO:** Achill Island (F6405); Clare Island (L6985); Newport (L9893); Westport (L9984)). *Mosely, 1927* as *Limnophilus* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Limnophilus* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Limnophilus* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Hickin, 1951* (**SLIGO:** Mullagmore (G7155)). *Hickin, 1967* (**SLIGO:** Mullaghmore (G7155)). *Carter, 1967* (**CORK:** Cape Clear Island (V9421)). *Fahy, 1972a* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1973a* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1973b* (unsafe larval identification (Wallace, pers. comm.)). *Bracken and Murray, 1973* (**KERRY:** L. Kilbrean (W0093)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H6906), adults. **WICKLOW:** L. Dan (O1504), adults). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Bracken, 1980b* (**MEATH:** R. Tolka (O0142), north of Dunboyne, (O0241), bridge upstream of Dunboyne tributary). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7192)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake; Upper Lake [Killarney]). *Dauod, Bolger and Bracken, 1986* as *Limnephilus marmratus*

(**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *Berté and Wallace, 1987* (**CAVAN:** L. Cuilcagh (V6389); Parker's Lake (N6497)). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Bracken and Dauod, 1990* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 3 out of 70 sampled sites). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Laune (V8991), the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 3 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1673)). *Becerra Jurado et al., 2008* (**WATERFORD:** Dunhill Village (the given grid reference of S0626 is wrong and has been corrected to S5002); Castle Farm (S5006); Milo's Farm (S5304)). *Becerra Jurado et al., 2009* (**WATERFORD:** ponds (S2510)). *Porst and Irvine, 2009a* (**MAYO:** Kilglassan turlough (M2764). **ROSCOMMON:** Lisduff (M8455)). *Porst and Irvine, 2009b* (**GALWAY:** Caranavoodaun turlough (M4515); Termon turlough (R4097)). *Atalah et al., 2010* (**IRELAND**). *Porst et al., 2012* (**GALWAY:** turloughs). *Hannigan and Kelly-Quinn, 2012* as *Limnephilus marmaratus* (**MAYO:** Owenirragh Bog (F9436), hollows. **WESTMEATH:** Scragh Bog (N4357), pools and hollows). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lakes (R5088), 273m, (R5188), 262m. **GALWAY:** lowland lakes (M0430), (M0329), (M0329), (M0229), (M0929), (M0927), (M0927)). *Little and Free, 2013* (**CLARE:** Ballycullinan L. (R2885); L. Gar (R5473) [given in the list as Location Name: D]. **DONEGAL:** L. Barra (B9312). **GALWAY:** Ballinahinch [Ballynahinch] Lake (L7648); Glendollagh [Garroman Lake] (L8447). **MAYO:** Carrowkeribly [Ballycong] L. (G2611); L. Cullin (G2303). **ROSCOMMON:** Cavetown L. (M8397)). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); Doolough (V9585); L. Currane (V5065); L. Gill (Q6113); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Galey (R0139)). *O'Connor, Bond and O'Connor, 2013* (**FERMANAGH:** Derryallen L. (H2433); Upper L. Erne (H2639)). *O'Connor and Davy-Bowker, 2014* (**ARMAGH:** R. Cusher (J0350). **DOWN:** Newry R. (J0730). **FERMANAGH:** R. Finn (H4220)). *Baars et al., 2014* (**IRELAND:** recorded in 4 of 12 upland peatland lakes). *Hannigan and Kelly-Quinn, 2014* (**IRELAND:** blanket bog). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Mill L. (H2438); Upper L. Erne (H2244)). *Anon., 2015a* (**CLARE:** L. Bunny (R3695). **DUBLIN:** Howth Head (O2637). **GALWAY:** L. Corrib (M2926). **MAYO:** Cong (M0957), (M1455). **OFFALY:** Silver R. (N1319)).

Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), adults 1885, CGB (BMNH). **ARMAGH: Acton** (J0640), ♀ 21 August 1901, [WFJ], conf. JPOC (NMI); **Castledillon** (H8947), ♀♀ 27 August 1894, [WFJ], conf. JPOC (NMI); **Poyntzpass** (J0639) [R. Bann], ♂ 20 September

1909, WFJ, conf. JPOC (NMI). **CARLOW**: **R. Barrow** (S7238), St Mullins, ♂ 17 June 1991, ♀ 15 August 1994, JPOC/MAOC, det. JPOC. **CAVAN: Corrakane L.** (H4000), small lake, LT 11♂♂9♀♀ 4-5 August 1973, JPOC; **L. Brackley** (H1921), 2♀♀ 28 September 1973, JPOC; **L. Cuilcagh** (N6389), ♂♀ 10 August 1972, LT 2♂♂5♀♀ 26-27 September 1973, 2♂♂♀ 31 August 1986, JPOC; **L. Gowna** (N2889), larva 1996/1997, JW; **L. Moneen** (G9828), ♀ 3 August & LT 2♀♀ 28-29 September 1973, JPOC; **L. Mullagh** (N6785), 4♂♂3♀♀ 10 August & 2♂♂ 31 August 1972, JPOC, larvae 1996/1997, JW; **L. Sheelin** (N4686), adult 26 August 1946, JRH, (N4685), Crover, IETS 1973/1974 adult, PG, (N4785), Mount Nugent, ♂♀ 1 August 1986, CM/OSF (SINMNH), (N4686), Crover, ♂♂♀ 30 September 1973, ♂ 6 August 1990, ♀ 12 September 1991, (N4285), Kilnahard, 2♀♀ 1 August 1986, JPOC, (N4183), Kelly's Bay, 5 larvae 8 March 1975, KFW, det. JPOC; **L. Sillan** (H6906), ♂♀ 11 August 1972 (NMI), LT 4♂♂5♀♀ 31 July-1 August 1973, (H7007), light ♀ 27 July, ♂♀ 11 August & LT ♀ 28-29 September 1972, (H7106), 3♂♂2♀♀ 9 August & 9♂♂8♀♀ 11 August 1972, ♂♀ 10 August 1973, JPOC; **L. Tacker** (H6908), ♀ 1 September 1972, JPOC; **Moyduff Lake** (H6909), 2♂♂♀ 10 August 1973, JPOC; **R. Annalee** (H4511), LT ♂ 27-28 September 1973, (H6806), above L. Sillan LT 6♂♂♀ 31 July-1 August 1973, (H7206), ♂ 1 August 1973, JPOC; **R. Barora** (N6893), LT 3♂♂ 1-2 August 1973, JPOC; **R. Black** (H0129), ♀ 28 September 1973, JPOC; **R. Shannon** (G9726), 2♂♂ LT 28-29 September 1973, JPOC (NMI); **Town Lake** (H6014), Cootehill, adult 13 August 1965, JRH. **CLARE: Ballycullinan L.** (R2885), ♂2♀♀ 14 August 2003, JPOC; **Ballynalacken area** (M1000), adult 2-14 June 1962, JDB, det. PHW (BMNH); **Doolough** (R1171), ♂ 9 July 1973, JPOC; **Dromore Lake** (R3586), larvae 1996/1997, JW; **Knockalough** (R1463), ♂2♀♀ 29 August & LT 13♂♂14♀♀ 8-9 July 1973, JPOC; **Lickeen Pond** (R1891), ♀ 10 July 1973, JPOC; **L. Ballycullinan** (R2885), larvae 1996/1997, JW; **L. Bunny** (R3796), adult 23 August 2003, GAC (per IDW), ♂2♀♀ 31 August 1973, JPOC; **L. Cullaun** (R3290), larva 1996/1997, JW; **L. Derg** (R7071), Killaloe, adult June 1948, Farran, det. JRH, (R6979), LT 8♂♂5♀♀ 2-3 September 1973, JPOC; **L. Doo** (R1171), 3♀♀ 29-30 August 1973, JPOC; **L. Doon** (R5674), ♀ 12 July 1973, JPOC; **L. Inchiquin** (R2789), ♂ 4-6 June 1972, larva 19 March & LT 6♂♂♀ 31 August-1 September 1973, ♂ 9 August 2003, JPOC, larva 1996/1997, JW; **L. Mooghna** (R1384), ♀ 30 August 1973, JPOC; **L. Teereen** (R4671), LT ♂ 11-12 July 1973, JPOC; **O'Brien's Big Lake** (R4182), 3♀♀ 11 July 1973, JPOC; **pond** (R3290), ♂ 30 August 1973, JPOC; **R. Bleach** (R6096), LT ♀ 3-4 September 1973, JPOC; **R. Caher (**M1608), Burren, adult 2-14 June 1962, JDB, det. PHW (BMNH), (M1608), LT 5♂♂4♀♀ 30-31 August 1973, JPOC; **R. Fergus** (R3478), ♀ 2 September 1973 (NMI), (R2688), ♀ 1 September 1973, JPOC; **R. Shannon** (R6767), O'Brien's Bridge, ♂♀ 3 September 1973, JPOC (NMI); **stream** (R4086), ♂♀ 1 September 1973, JPOC. **CORK: Annahala Bridge** (W3371), ♂ 20 August 1983, KGMB; **Buttevant** (R5408) [R. Awbeg], MVLT ♂♀ 17 August 1995, KGMB; **Fota Wildlife**

Park (W7871), ♀ 20 September 1986, KGMB, det. JPOC; **Glengarriff** (V9256), adult July 1947, BPB, det. JRH; **Gouganebarra** (W0966), larva 27 October, MJC det JPOC; **Liss Ard House** (W1331), south of Skibbereen, MVLT 6♂♂11♀♀ 24 August 1991, KGMB, det. JPOC; **L. Abisdealy** (W1331), south of Skibbereen, MVLT ♀ 15-16 August 1992, KGMB, det. JPOC; **L. Allua** (W1965), 2♂♂ 16 August 1985, KGMB, det. JPOC; **Sherkin Island** (W0023), Drolain Point, pasture, UVLT 2♂♂ 29 June 1981, SB, det. JPOC (NMI). **DONEGAL: Coolmore** (G8566), ♂ July 1894, [WFJ], conf. JPOC (NMI); **Gartan L.** (C0516), adult September 1936 (BMNH); **Glenveagh National Park** (C0423), MVLT ♂ 11 August 1984, KGMB, det. JPOC, LT 4♂♂2♀♀ 4 August & ♂2♀♀ 6 August 1982, COK, det. JPOC; **Kindrum** [L.] (C1843), LT ♂ 16 July 1980, JS, det. JPOC (NMI). **DUBLIN: near Clonsilla** (O0536) [R. Liffey], ♂ 3 July 1972, KGMB, det. JPOC; **R. Tolka** (O0640), Mulhuddart, ♂ 12 June 1973, JPOC. **FERMANAGH: Derryallen L.** (H2433), ♂ 10 October 2013, JPOC/MAOC, det. JPOC (NMI); **R. Erne** (H2637), Cloonatrig, Bellanaleck, LT ♂ 1-2 September 2015, JPOC/MAOC, det. JPOC; **Upper L. Erne** (H2639), Bellanaleck Quay, ♀ 10 October 2013, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Barna** (M2322), small stream perhaps affected by salt, larvae 22 January 1978, DMG, det. JPOC (NMI); **Callownamuck Bog** (M2139), LT ♂ 13 August 2014, MG/CC, det. MG; **Connemara National Park** (L7157), LT 2♀♀ 17 September 1982, NK, det. JPOC, RLT 3♂♂3♀♀ 18 August 1982, COK, det. JPOC (NMI); **Drumgriffin** (M3538), 2 ponds, larvae 29 June 1983, RM, det. BW (per IDW); **Dunkellin R./Rahasane Turlough** (M4719), larva 25 October 1983, PB, det. JPOC; **Garryland Wood** (M4103), ♂ pupa 21 July 1977, KP, det. JPOC; **Hackett L.** (west side) (M3049), Lisdonagh, MT 2♀♀ 12-26 June 2014, JC, det MG; **Hollygrove Lake** [Ballaghdacker L.] (M7857), ♂ 8 August 2001, JPOC; **Inverin** (M0822), adults 17 July-2 August 1926, MEM (BMNH); **Letterfrack** (L7158), lake near, ♀ July 1982, JPOC; **L. Ballyquirke** (M2331), larva 1996/1997, JW; **L. Beg** (M2039), Pollagh Bog, LT ♀ 30 August 2014, MG/CC, det. MG; **L. Corrib** (M1745), adults July-August 1964, MK, (M2531), Hurney's Point [near Moycullen], MVLT ♀ 12 August, ♀ 28 August and 8♀♀ 25 September 2003, (M2642), Keekill, LT ♂4♀♀ 2 August & 6♀♀ 28 August 2003, KGMB, det. JPOC, (M2531), Lower, ♂♀ 27 June 1980, BC, conf. JPOC (NMI), (M2341), Knockferry, LT 2♂♂ 21 August 2014, MG/CC, det. MG; **L. Cutra** (R4698), MVLT ♀ 30 August 1996, KGMB, det. JPOC, (M2741), Cloonmore, LT 4♂♂2♀♀ 22 July 2014, MG/CC, det MG; **L. Mask** (M0957), Kilbeg Lower, LT 2♂♂3♀♀ 16 August 2014, MG; **L. Pollacappal** (L7458), Kylemore Abbey, ♀ 25 July 1982, JPOC (NMI); **Mount Belleu** [Mountbellew] **Bridge** (M6846), 1.5km east, old peat cuttings and ponds, RM, det. BW (per IDW); **Mountbellew** (M6646), pleasure lake north shore, ♂ 21 July 2012, MG; **Oughterard** (M1343), adults 3-9 August 1926, MEM (BMNH); **R. Black** (M2749), 3 larvae 10 September 1980, LW, conf. JPOC (NMI); **R. Corrib** (M2925), Nun's Island, light ♀ 1-7 August 1973, DMG, det. JPOC, (M2926), NUI Galway, larva 7 March 2011, D. McHugh, conf MG.

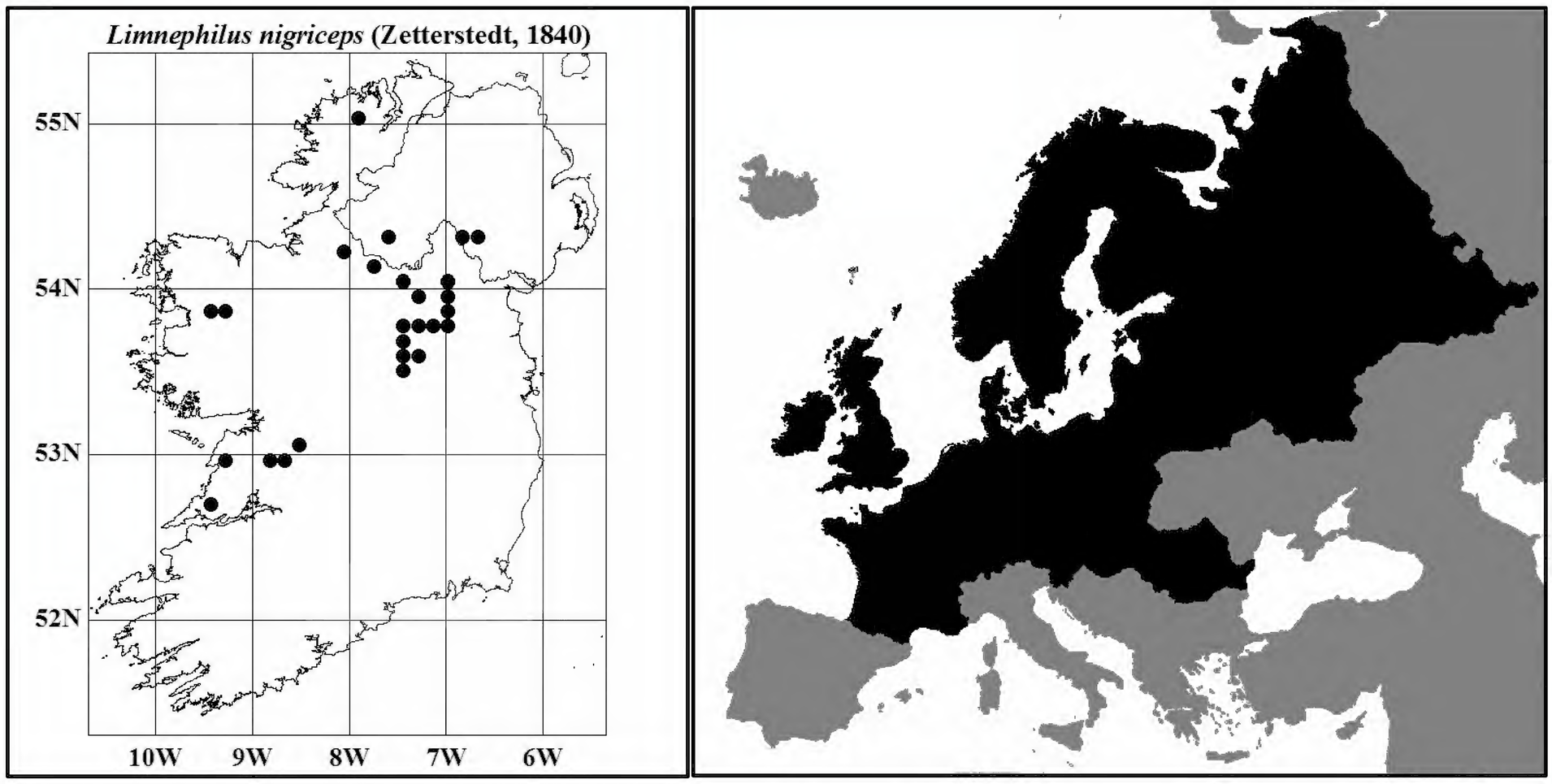
GALWAY/ROSCOMMON: R. Suck (M8146), at Ballyforan, larvae 26 June 1983, RM, det. BW (per IDW). **KERRY: Blue Pool** (V9786), R. Cloghereen, ♂ 30 August 1987, JPOC; **Kenmare** (V9471), ♀ 16 August 1902, JJFXK, conf. JPOC (NMI); **Kilbrean Lake** (W0093), IET 10♀♀ 28 July-4 August 1969, IFT, det. JPOC; **Killarney**, adult July 1960, MK, det. JRH; **Killarney Lakes**, trout stomachs, 7 larvae, UCD, det. JPOC; **L. Caragh** (V7292), larva 5 July & ♂ 27 August 1973, JPOC; **L. Leane** (V9686), 6 larvae reed bed 13 April 1973, JPOC, (V9291), Golf Course, ♀ 15 September 1981, JPOC, (V9489), Ross Bay, Cherry Point, larvae, June 1974, IDW; **Muckross Lake** (V9685), 9 larvae reed bed, 10 April 1973, JPOC, Goleen, larvae June 1974, IDW, (V9485), Brickeen West Cove, 3 larvae December 1971, EJW (NMI); **R. Caragh** (V7186), ♀ 27 August 1973, JPOC; **R. Curraheen**, (Q7811), ♂ LT 7-8 July 1973, JPOC (NMI); **R. Gaddagh** (V8491), ♂ 24 August 1973, JPOC (NMI); **R. Laune** (V8991), exiting L. Leane, ♂ 5 September 1972, 5♂♂2♀♀ 24 August 1973 (NMI), JPOC; **pond** (V9080), ♂ 4 July 1973, JPOC; **Upper Lake, Killarney** (V9181), ♂ 6 September 1972, larva reed bed, 13 April 1973, JPOC, dredge larva June 1972, EJW (NMI). **KILDARE: canal** (N7617), at Milltown, 14♂♂5♀♀ 3 August 1986, CM/OSF (SINMNH), JPOC; **Grand Canal** (N9225), near Devonshire Bridge, 2♂♂ 28 June 1977, MDCW, det. JPOC, (N8125), Bonynge Bridge, ♂♀ 3 July 1977, KP, det. JPOC; **Newbridge (Pollardstown) Fen** (N7715), MVLT near springs, canal drains and *Schoenus* fen, ♂♀ 22 July 1989, KGMB/JAG, det. JPOC; **R. Liffey** (N8827), Clane, ♀ 11 July 1972, JPOC. **LAOIS: The Derries** (N5805), ♀ 20 September 1982, JPOC. **LEITRIM: Killegar Estate** (H2507), LT ♂♀ 16 August 1991, SW, det. JPOC. **LIMERICK: R. Shannon** (R6663), Castleconnell, ♀ 3 August 1988, LT 3♂♂3♀♀ 12-13 July 1973, JPOC, (R5456), below Limerick, 4 larvae 13 July 1972, AFF, det. JPOC. **LONGFORD: L. Ree** (N0069), Lanesborough, ♀ 14 August 2001, JPOC; **pond** (N1259), Pake Bridge near Ballymahon, larvae 21 June 1983, RM, det. BW (per IDW). **MAYO: Achill** [Island] (F6405), ♂♀ June 1909, JNH, conf. JPOC (NMI); **Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults July-August 1964, MK; **Clare Island** (L6985), larva, peaty lake, SF (det. IDW), MT ♂♀ 11 June 1998, SF, conf. JPOC (NMI), ♂♀ 10 September 1909, conf. JPOC (NMI); **Cloghan's Hill** [Black R.] (M3058), adult 1 July 1972, LSG (MANM) (per IDW); **L. Mask** (M1259), (M1465), adults July-August 1964, MK; **Sraheen L.** (F7100) [Achill Island], 2♀♀ June 1909, JNH, det. KJM, conf. JPOC (NMI), ♀, WFJ, conf. JPOC (NMI); **stream** (G1919), entering L. Conn, larva 18 July 1979, TC, det. JPOC; **Westport** (L9984), 2♂♂♀, JJFXK, conf. JPOC (NMI); **Westport District** (L9984), ♂, conf. JPOC (NMI). **MEATH: Kells Blackwater R.** (N7377), 2♀♀ 1 August 1986, JPOC; **L. Sheelin** (N4482), Goreport Bay, IETS 1973/1974 adult, PG; **Oldbridge** (O0476), small canal near, ♀ 24 August 1986, JPOC (NMI); **R. Athboy** (N7262), larvae 19 June 1983, RM, det. BW (per IDW); **R. Boyne** (N9271), Stackallen, adult 6 September 1946, JRH. **MEATH/WESTMEATH: L. Glass** (N5671), larvae 19 June 1983, det. BW (per IDW). **MONAGHAN: L. Moylemuck**

(H6415), ♂♀ 27 July 1972, JPOC. **OFFALY: Clorhane** (M9827), ♂ 19 September 1996, (M9927), MVT 3♂♂ 12 August 1986, KGMB, det. JPOC; **Edenderry** (N6332), ♀ 19 September 1892, conf. JPOC (NMI); **Mongan Bog** (N0330), LT ♀ 5 July 1983, MVLT ♂ 24 August 1983, JAG, det. JPOC, larvae 25 June 1983, RM, det. BW (per IDW); **Oughter** (N2123), peat cuttings by raised bog, larvae 28 June 1983, RM, det. BW (per IDW); **Pallas Lake** (N2719), larvae 22 June 1983, RM, det. BW (per IDW); **Shannon Bridge** (M9826) (near), ditch on peat moor, larvae 25 June 1983, RM, det. BW (per IDW). **ROSCOMMON: Linbaun L.** (M7963), 4♀♀ 9 August 2001, JPOC; **L. Key** (G8404), Rockingham Estate, ♀ 11 August 2001, JPOC; **R. Shannon** (M9830), 2 larvae 13 July 1972, (M9828), larva 13 July 1972, AFF, det. JPOC; **R. Suck** (M8257), Athleague, ♂ 15 August 2001, JPOC. **SLIGO: L. Arrow** (G7711), adult 3 August 1912, MEM (BMNH); **Mullaghmore** (G7155), adult, 2 July 1950, N. E. Hickin (per IDW); **Rathaberna** (G6940), ♂ 30 August 1988, DCFC, det. JPOC. **TIPPERARY: Brownstown R.** (S1665), larvae 6 July 1992, DAG/JML, det. JML; **Hayes Island** (M8604) [R. Shannon], Portumna, 2♂♂ June 1921, JNH, det. JPOC. **TYRONE: Creggan** (H6278), LT ♀ 6 September 2014, KGMB, det. JPOC. **WATERFORD: Annestowns R. Valley Reserve** (S5000), small outflow stream from pond, larva 8 July 2014, MAOC/HOC, det. JPOC (NMI); **Ballin L.** (S4503), near Kill, ♂ 5 July 1988, JPOC; **Fennor Bog** (S5301), ♀ 8 July 2014, JPOC. **WESTMEATH: All Saints Bog** (N0111), ♀ 25 September 2008, MN, det. JPOC; **Athlone** (N0341) [R. Shannon], adult 7a July 1888, [JJFXK] (BMNH), ♀ 28 June & ♀ 14 July 1888, JJFXK, conf. JPOC (NMI), ♀ 20 August 1888, [JJFXK] (misidentified as *Limnephilus stigma*), det. JPOC (NMI); **Ballinderry L.** (N2139), larvae 25 June 1983, RM, det. BW (per IDW); **Coosan** (N0544), Creaghduff, LT ♂♂♀♀ 17 August 1980, JS, det. JPOC (NMI); **Grand Canal** (N3633), south of Kilbeggan, larvae 23 June 1983, RM, det. BW (per IDW); **L. Derravaragh**, IETS 1973/1974: (N4663), between Clinton's Bay and Crooked Wood, adult, (N3967), Nally's Shore, adult, (N3968), bay near R. Inny, 14 adults, PG; **L. Ennell** (N3947), 2 larvae reed bed, 15 May 1973, JPOC; **L. Lene** (N5067), ♂ 11 August 1998, JPOC (NMI); **L. Owel**, IETS 1973/1974: (N4156), near Beach Hill, adult, (N3657), near Carrickphilbin Island, 2 adults, PG; **L. Sheever** (N4655), larvae 19 June 1983, RM, det. BW (per IDW); **Mullingar** (N3953), west of, 2 ponds, larvae 20 June 1983, RM, det. BW (per IDW); **R. Shannon**, adult 23 August 1958, PHW (BMNH), (N0538), larva 13 July 1972, AFF, det. JPOC; **Twy L.** (N0943), larvae 24 June 1983, RM, det. BW (per IDW). **WEXFORD: Curracloe** (T1127), at marshes behind the sand-dunes, ♂♀ 9 June 1982, ♀ 10 June 1991, JPOC; **J. F. Kennedy Park** (S7219), beside pond, ♀ 7 July 2014, JPOC; **Wexford**, ♂ 11 July 1902, JJFXK, conf. JPOC (NMI). **WICKLOW: Glendalough** (T1196), stream, ♀ 22 September 1990, JPOC; **L. Dan** (O1504), ♀ 1 August & ♀ 16 August 1972, ♂♀ 21 July & ♂ 19 August 1973, LTS 5♂♂4♀♀ ♂ 22-23 September 1972, 21-22 June 1973, (O1502), ♂♀ 12 August 1973, JPOC; **R. Redcross** (T2878), ♂♂ 21 July 1973, JPOC; **Three Mile Water** (T2989),

river, LT ♂ 19-20 July 1973, JPOC; **Vartry Reservoir** (O1903), LT 7♂♂16♀♀ 19-20 August & ♂ 19 August 1973, JPOC, 2♂♂ 31 July 1986, CM/OSF (SINMNH).

104. *Limnephilus nigriceps* (Zetterstedt, 1840)

FIGURES 245-246. Known Irish and European distributions of *Limnephilus nigriceps*.



Limnephilus nigriceps is a local Irish species. The cased larvae live in lakes, ponds, and pools in bogs. Lakes may be calcareous or acidic. The cases are straight, composed of butted or overlapped plant material and are usually triangular in cross-section. The larvae are mainly shredders. The adults fly late in the season i.e. September-November and are often netted while sitting on vegetation during the daytime. The species is widespread in northern and western Europe.

Flight period: September–November (22 September–3 November).

Counties and 10km squares: Armagh, Cavan, Clare, Donegal, Fermanagh, Galway, Mayo, Meath, Westmeath (9/32). The species is known from twenty-six 10km squares (26/1019).

Published records

Johnson, 1893 as *Limnophilus* (**ARMAGH:** Lowry's L. (H9144)). *King and Halbert, 1910* as *Limnophilus* (**ARMAGH:** Lowry's L. (H9144)). *Praeger, 1950* as *Limnophilus* (**ARMAGH:** Lowry's L. (H9144)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1978a* (**IRELAND:** rediscovered); *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan [H7007], adults). *O'Connor, 1987* (**ARMAGH**. **CAVAN**. **WESTMEATH**). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** Central Ireland). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** Central Ireland). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), pools). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and*

Harrison, 2013 (**CLARE:** upland lakes (R5088), 273m, (R5188), 262m. **GALWAY:** upland lake (M6701), 183m). *O'Connor, Bond and O'Connor, 2013* (**FERMANAGH:** Mill L. (H2438)).

Unpublished records and voucher specimens

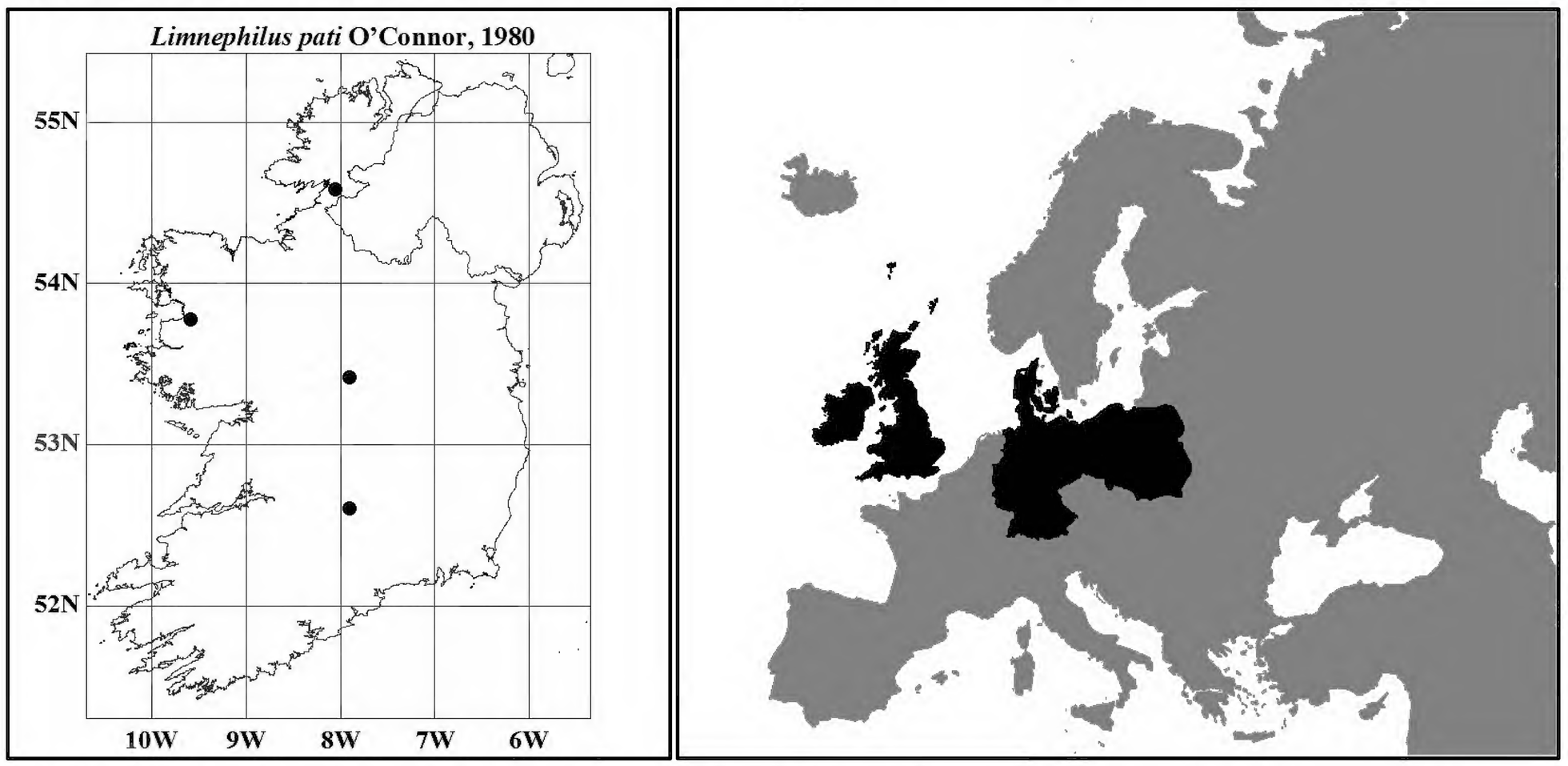
ARMAGH: Lowry's L. (H9144), adult 24 September 1892, det. RMCL (BMNH), ♂ 24 September 1892, WFJ, conf. JPOC (NMI); **Tynan** [lake near] (H7541), adult 22 September 1894, det. RMCL (BMNH). **CAVAN: L. Brackley** (H1921), ♂ 28 September 1973, JPOC; **L. Cuilcagh** (N6389), 17♂♂ 27 September 1973, LTS 5♂♂ 2 October 1972, 47♂♂5♀♀ 26-27 September 1973, JPOC; **L. Inchin** (H3808), 22♂♂2♀♀ 29 September 1973, JPOC; **L. Levey** (H5002), 15♂♂10♀♀ 28 September 1973, JPOC; **L. Moneen** (G9828), 7♂♂4♀♀ 29 September & LT 3♂♂ 28-29 September 1973, JPOC; **L. Mullagh** (N6785), 40♂♂5♀♀ 4 October 1972, 6♂♂♀ 27 September 1973, JPOC; **L. Sheelin** (N4182), LT ♂ 22-23 September 1973, JPOC; **L. Sillan** (H7007), light 2♂♂ 30-31 September 1972, JPOC; **Milltown L.** (H7103), 2♂♂ 4 October 1972, JPOC; **R. Blackwater** (N6283), exiting L. Ramor, 8♂♂ 27 September 1973, JPOC; **small ponds** (H6411), Boagh, surrounded by floating bog, ♂♀ 3 October 1972, JPOC (NMI). **CLARE: Knockerra** [near lake and river] (R0557), adult October, MK; **Lickeen Lake** (R1891), larvae March and April 1997, JW. **DONEGAL: L. Nacally** (C0517), adult October, MK. **FERMANAGH: Mill L.** (H2438), near Bellanaleck, 3♂♂ 9 October 2013, JPOC/MAOC, det. JPOC. **MAYO: Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults September 1964, MK. **MEATH: L. Sheelin** (N4582), Gortport, 6♂♂ 22 September 1973, JPOC. **WESTMEATH: L. Derravaragh** (N3968), bay near R. Inny, IETS 1973/1974 adult, PG; **L. Ennell** (N4149), adult 28 September 1946, JRH; **L. Owel** (N4156), 5♂♂ IET, MK, det. JPOC, IET ♀♀ 3 November 1971, IFT, det. JPOC (NMI).

105. *Limnephilus pati* O'Connor, 1980

Limnephilus pati is a local and rare Irish species. There has only been one recent record here and that from a light-trap run at Cabragh Bog, County Tipperary. The larvae are unknown but are probably mainly shredders like other *Limnephilus* species. The older material has no associated habitat details but the nature of some of the recently-discovered sites suggest to some entomologists that this caddisfly is a species of fens and particularly base-rich fen. The Ballaugh Curraghs on the Isle of Man are an area of fen and willow carr that has developed on the bed of a post-glacial lake. Both Redgrave and Chippenham Fens are relict areas of alkaline valley fen. One of the German sites, Mindelsee in Baden-Württemberg, is a lake with areas of base-rich springs and associated fen. *L. pati* has also been found at a mineral-rich ground water-fed fen near Luboń in northwest Poland (Tempelman, Verdonschot and Neu, 2013). Interestingly, Cabragh Bog includes both a nutrient-poor marl fen and a nutrient-rich floodplain fen. The light-trap site was adjacent to a calcium-rich, alkaline lake of area 1-2ha. A short stream leads from a spring directly west of the lake and the locality is

in an area of carboniferous limestone bedrock (O'Connor and Bond, 1995). *L. pati* is rare and local elsewhere in Europe. The species has not been recorded in Great Britain since 1915 and is presumed extinct there. However, in 1987, adults were rediscovered in the Manx Ballaugh Curraghs where there are still surprisingly extensive marshes (O'Connor, Wallace and Wallace, 1993). Adults have also been collected in Denmark, Germany (two sites) and Poland (Tobias, 1981; Klima and Weidlich, 1993; Wiberg-Larsen, 2006; Tempelman, Verdonschot and Neu, 2013). Often, only singletons have been taken. Crichton (1990) suggested that *L. pati* had no adult ovarian diapause so that the flight period is normally short and occurs in spring and summer. Irish adults of *L. pati* are shown (Figs 249-259).

FIGURES 247-248. Known Irish and European distributions of *Limnephilus pati*.



Flight period: June–July (28 June–?25 July). The specimen dated July 1894 was actually collected between 19 and 25 July. Specimens have been taken elsewhere in the British Isles from 26 June–30 July (O'Connor and Barnard, 1981).

Counties and 10km squares: Donegal, Mayo, Tipperary, Westmeath (4/32). The species is known from four 10km squares (4/1019).

Published records

O'Connor, 1980 (**DONEGAL:** Coxtown (G9272). **MAYO:** [Knappagh L. [M0080] on Carrowbeg R. (M0184)]). *O'Connor and Barnard, 1981* (**WESTMEATH:** Athlone (N0446) or (N0243)). *O'Connor, 1987* (**DONEGAL**. **MAYO**. **WESTMEATH**). *Crichton, 1990* (**IRELAND**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *O'Connor and Bond, 1995* (**TIPPERARY:** Cabragh Wetlands near Thurles (S1054)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**DONEGAL**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

DONEGAL: Coxtown (G9272), ♂ July 1894, WFJ, det. JPOC [Holotype] (NMI). **TIPPERARY: Cabragh Bog** (S1054), MVLT 2♂♂2♀♀ 28 June 1994, KGMB, det.

JPOC (NMI). **MAYO: "238"** [Knappagh L. (M0080) on Carrowbeg R. (M0084)], ♂, [JJFXK], det. JPOC [Paratype] (HMAG). **WESTMEATH: Athlone** (N0639), ♀ 12 July 1888, [JJFXK], det. JPOC (HMAG). While O'Connor and Barnard (1981) give (N0446) or (N0243), it is possible that the specimen originated from the Bog of Allen (N0639) which once reached Athlone.

Photographs of Irish adults of *Limnephilus pati* by Tatyana S. Vshivkova.

FIGURE 249. A view of the ♂ genitalia.

FIGURE 250. A ventral view of the ♂ genitalia.

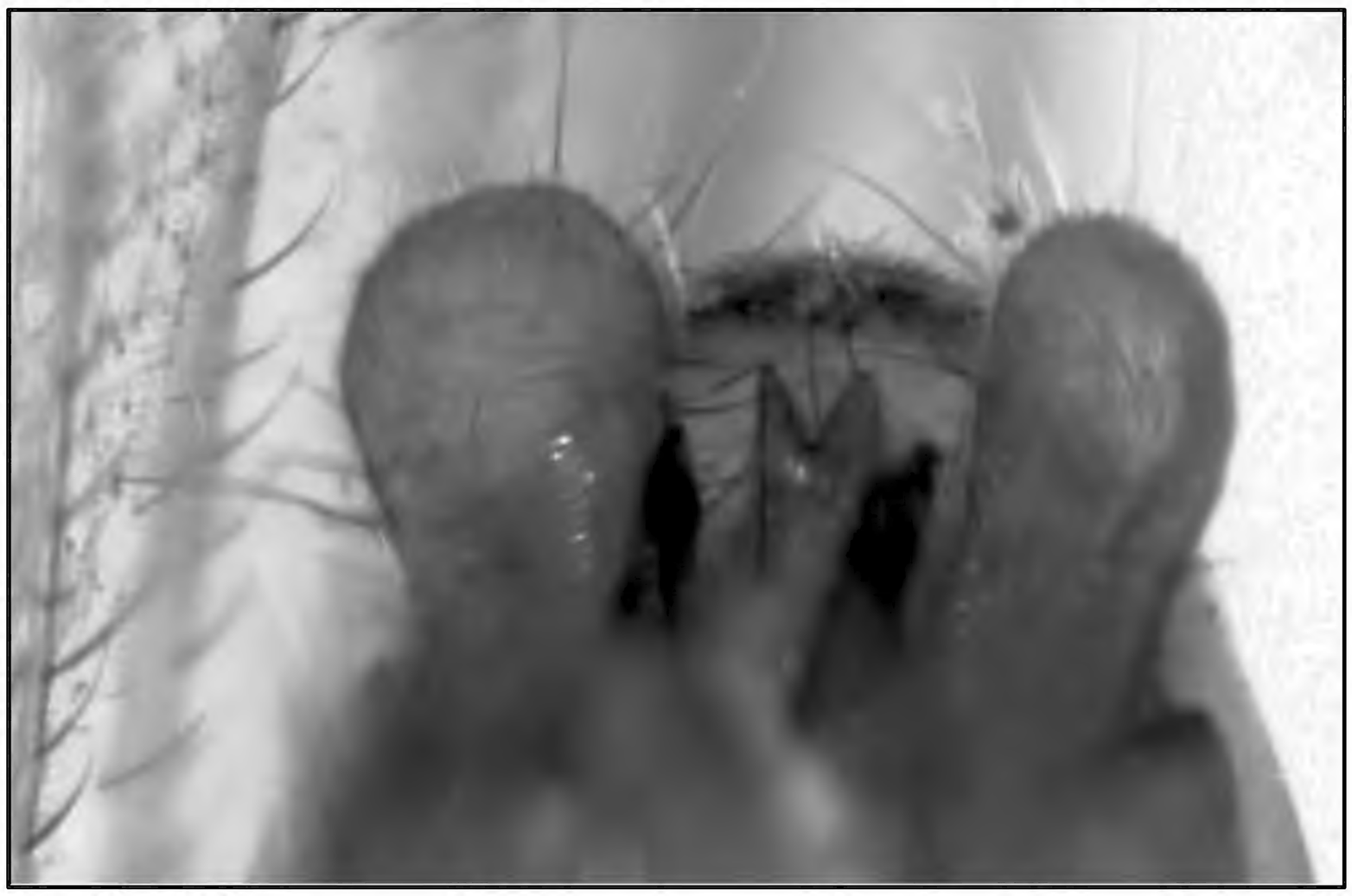


FIGURE 251. A lateral view of the ♂ genitalia.

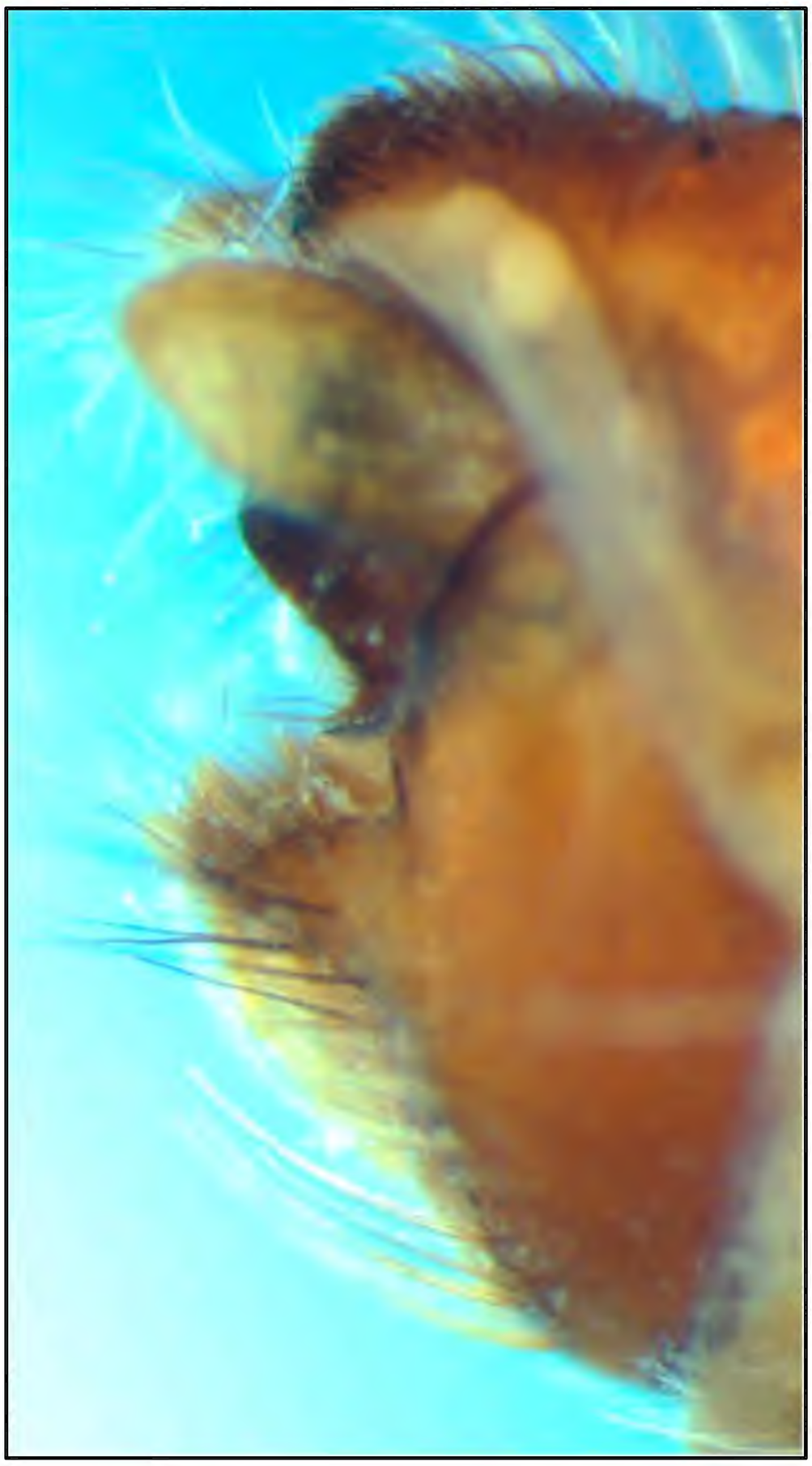


FIGURE 252. A dorsal view of the caudal end of the ♂ abdomen.

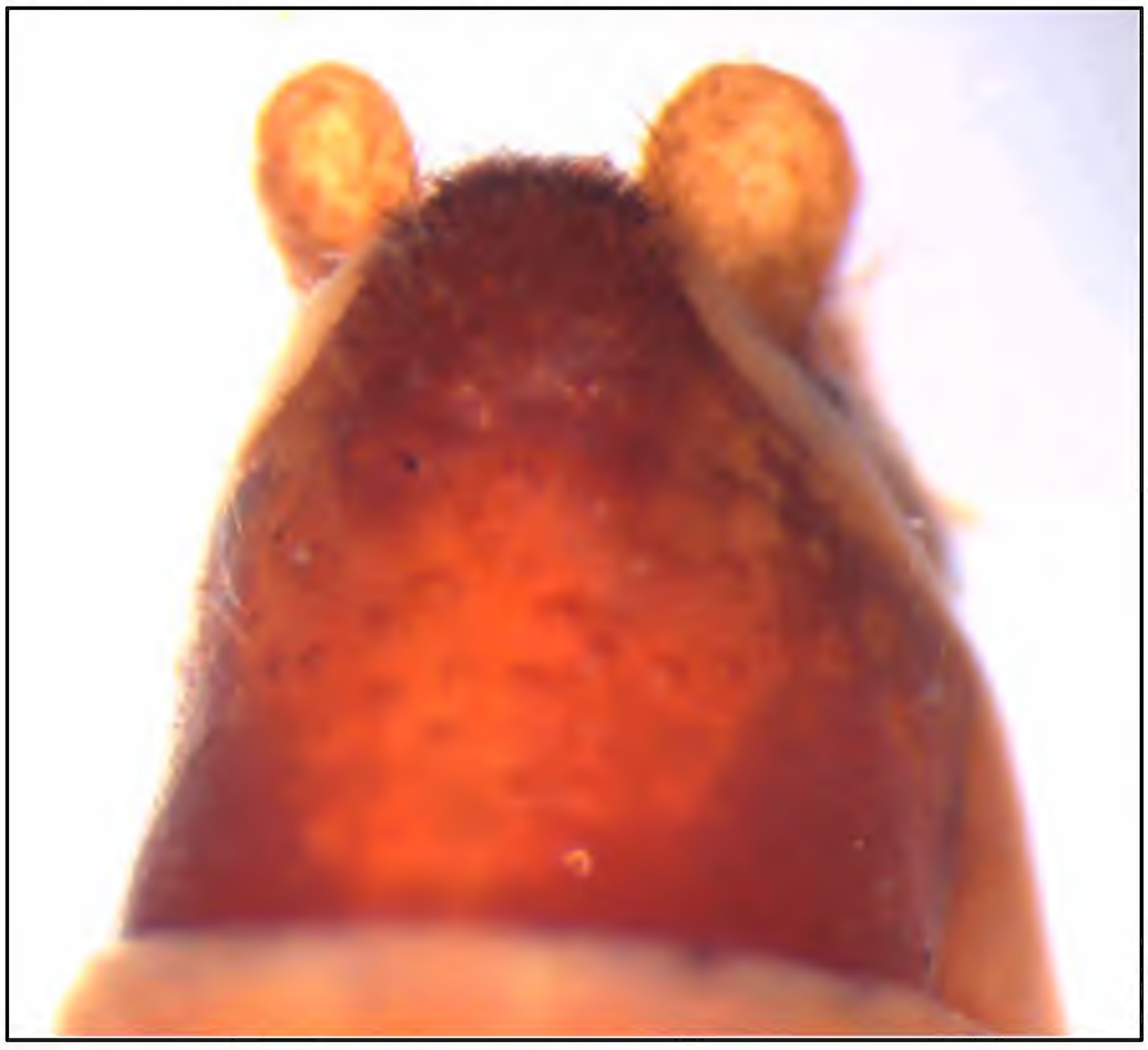


FIGURE 253. A view of the ♂ genitalia.

FIGURE 254. A ventral view of the ♀ genitalia.

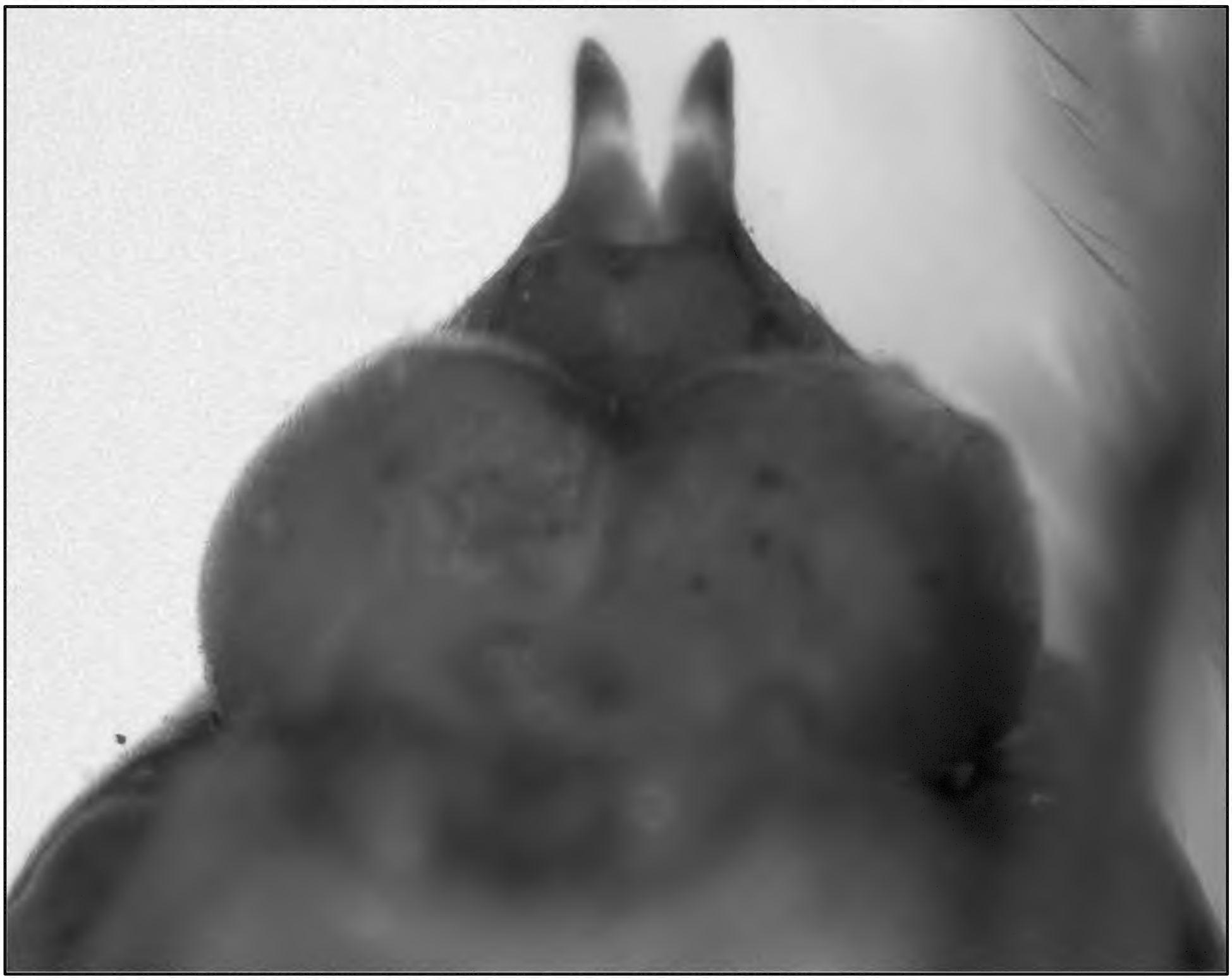


FIGURE 255. A lateral view of the head.

FIGURE 256. A general view of a pinned specimen.

FIGURE 257. A ventral view of the head showing the mouthparts.

FIGURE 258. A view of the thorax.

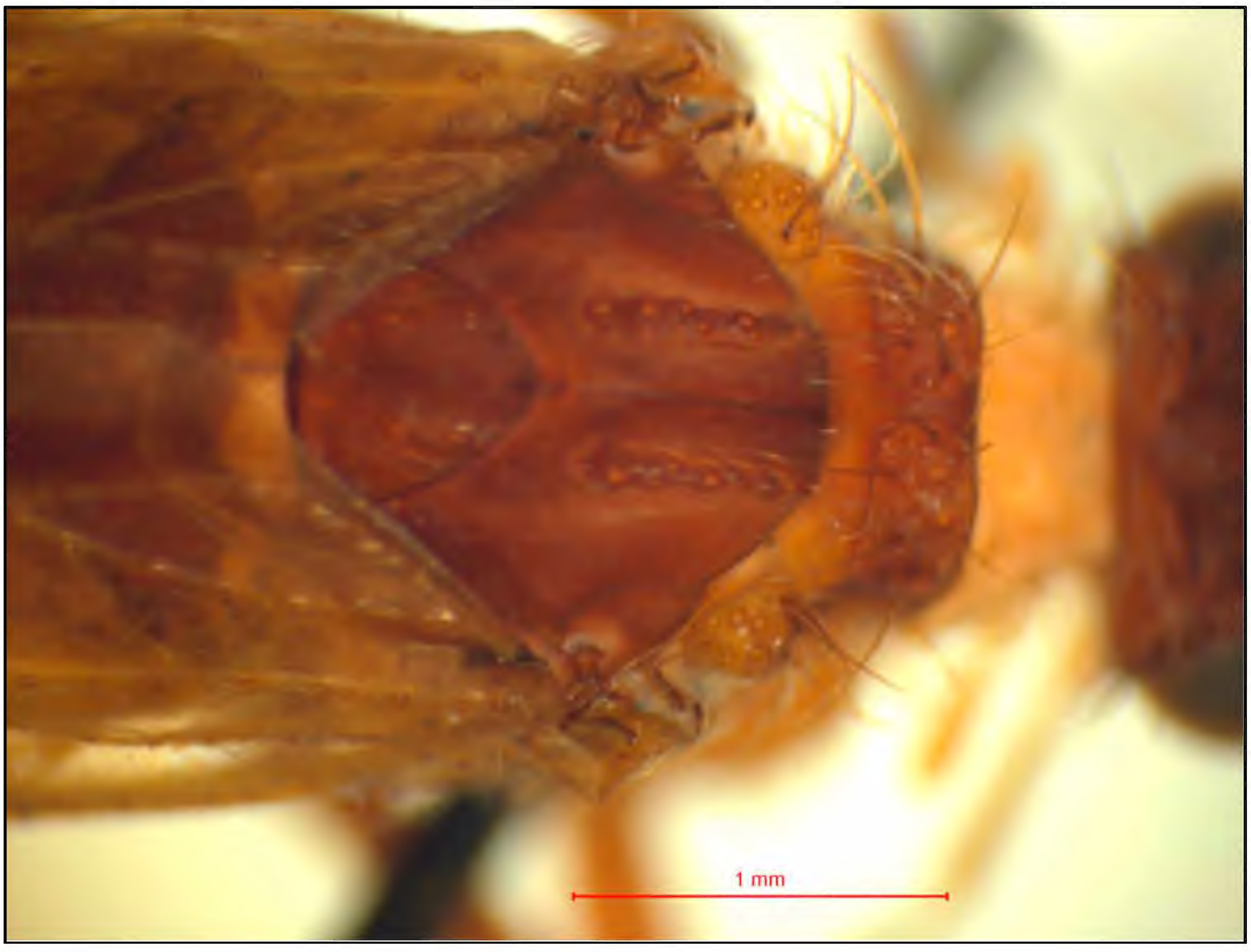
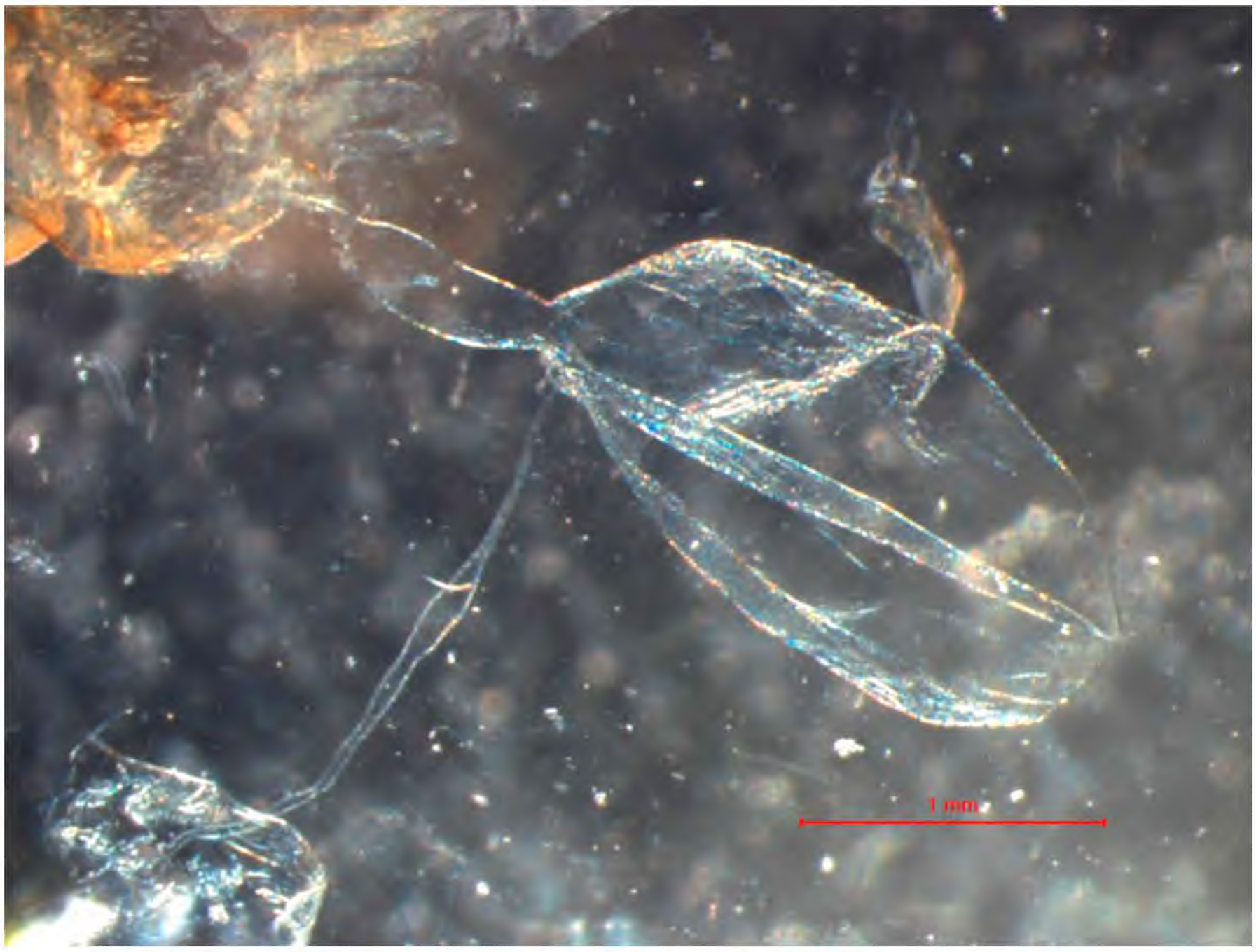


FIGURE 259. A view of the spermatheca of the ♀.



[*Limnephilus politus* McLachlan, 1865

There are no authentic Irish records of *Limnephilus politus*. No adult material from Ireland has been located. There is only an unlabelled ♂, confirmed by the author, in the National Museum of Ireland.

Published records

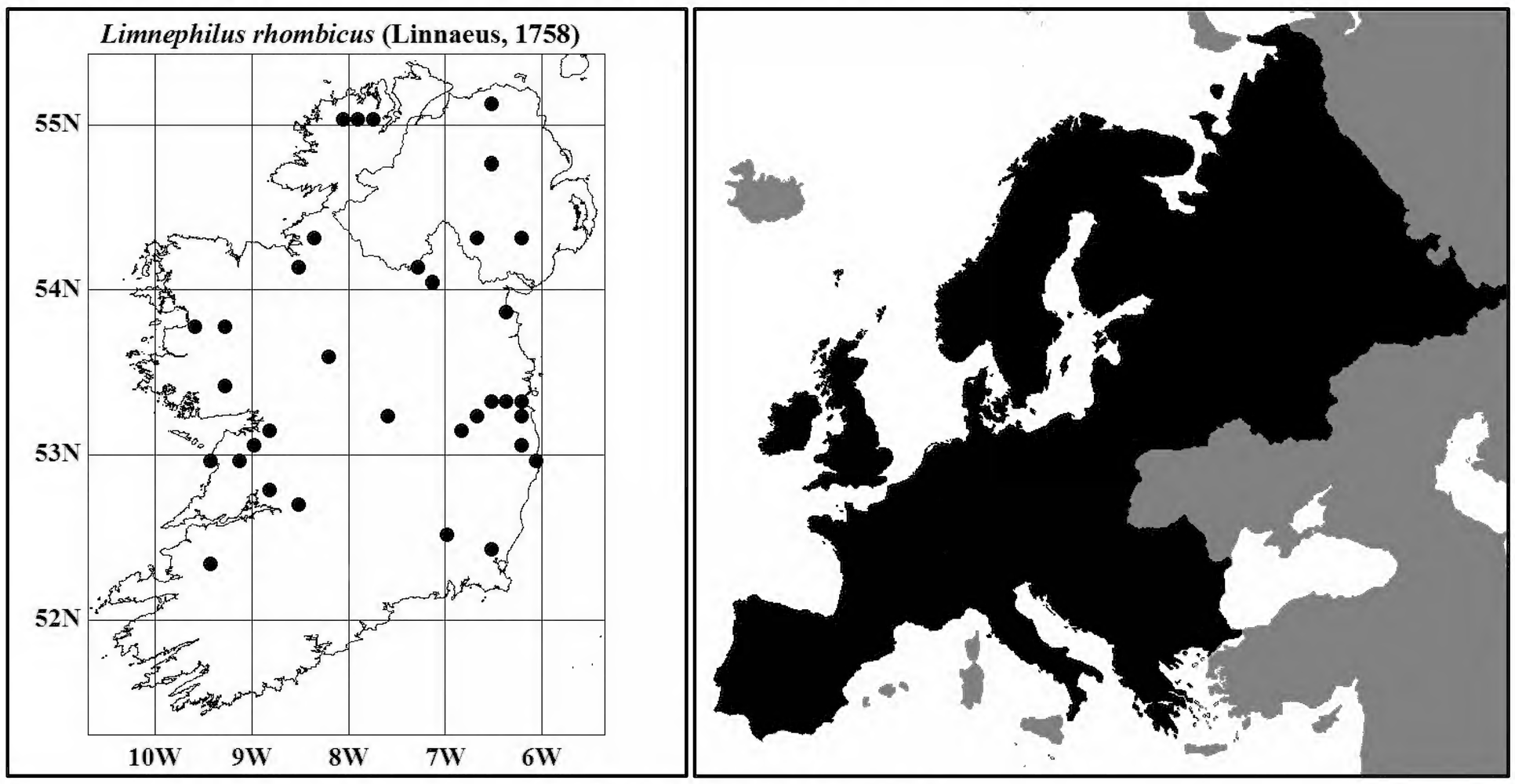
King, 1888a as *Limnophilus* (KERRY: Killarney). *King and Halbert, 1910* as *Limnophilus* (KERRY: Killarney [McLachlan's record], apparently rare, and has not been recently met with in Ireland). *Bracken and Murray, 1973* (misidentification). *Botosaneanu and Malicky, 1978* (IRELAND). *O'Connor and Nelson, 2012* (mention that there is no authentic material). *Little and Free, 2013* (unsafe larval identification).]

106. *Limnephilus rhombicus* (Linnaeus, 1758)

Malicky (2005) gives two subspecies but only the ssp. *rhombicus* occurs in Ireland where it is widely distributed. However, at present, there is a lack of records from the south-west. The adults are distinctive due to a large pale rhomboid marking near the centre of the forewing (Fig. 1). The cased larvae occur in bogs, fens, lakes, reservoirs, rivers, tufa streams and turloughs. They are mainly shredders and the mature larvae have variably shaped cases composed of chunks of plant material, mollusc shells, seeds or mineral particles. The species is widespread in Europe.

Flight period: May–August (20/30 May–22 August). Adults were taken in a Malaise trap during the period 20 to 30 May. There is also a reared adult from 7 June (Kennedy, pers. comm.). Barnard and Ross (2012) give a British flight period as (April), May–June, July–September with a summer diapause.
Counties and 10km squares: Antrim, Armagh, Cavan, Clare, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kildare, Leitrim, Limerick, Louth, Mayo, Offaly, Roscommon, Sligo, Tipperary, Wexford, Wicklow (21/32). The species is known from thirty-four 10km squares (34/1019).

FIGURES 260-261. Irish and European distributions of *Limnephilus rhombicus*.



Published records

King, 1888a as *Limnophilus* (**ARMAGH:** Armagh (H8745). **MAYO:** Carrowbeg R. (M0084). **SLIGO:** Mackree [Markree] Castle (G6925)). *King and Halbert, 1910* as *Limnophilus* (**ARMAGH:** Armagh (H8745). **DONEGAL:** near Kilmacrennan (C1420) [Leannan R.]; R. Lennan [Leannan] (C1521). **DUBLIN:** Dundrum (O1727). **LOUTH:** Castlebellingham (O0595) [R. Glyde]. **MAYO:** Carrowbeg R. (M0084). **ROSCOMMON:** Mote Park (M8960). **SLIGO:** Markree Castle (G6925) [Unshin R.]. **WEXFORD:** Edenvale (T0427) [R. Sow]). *Halbert, 1912* as *Limnophilus* (**MAYO:** Westport (L9984)). *Beirne and Harris, 1946* as *Limnophilus* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dauod, Bolger and Bracken, 1986* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *O'Connor, 1987* (**IRELAND:** widespread). *Bracken and Dauod, 1990* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 2 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O Connor, Á. et al., 2004* (**GALWAY:** Caranavoodaun turlough (M4515); L. Coy (turlough) (M4907); Roo West (turlough) (M3802)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 7 out of 207 river sites). *Kelly-Quinn et*

al., 2005 (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1777)). *Donohue et al., 2009* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**LEITRIM:** Glencar L. (G7543)). *O'Connor and Davy-Bowker, 2014* (**DERRY (LONDONDERRY):** R. Moyola (H9590). **FERMANAGH:** R. Finn (H4220)).

Unpublished records and voucher specimens

ANTRIM: Garry Bog (C9430), LT ♀ 17 June 2014, KGMB, det. JPOC (NMI). **ARMAGH: Armagh** (H8745), ♀, WFJ (NMI). **CAVAN: R. Laragh** (H5210), 6♂♂♀ LT 2-3 August 1973, JPOC (NMI). **CLARE: Killnaboy** [near L. Inchiquin] (R2889), 2♂♂ indoors, MFOG, det. JPOC; **Liscannor** (R0688), LT ♂ 10 July 1980, JPOC (NMI); **R. Fergus** (R2592), LT ♂ 10-11 July 1973, JPOC; **R. Rinne** (R4174), ♀ 12 July 1973, JPOC (NMI). **DONEGAL: Glenveagh National Park** (C0018), near Owenacoo R., MT ♂2♀♀ 20-30 May 1998, MCDS, det. JPOC, (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT ♀ 10-30 July 1998, MCDS, det. JPOC. **DOWN: Corbert L.** (J1744), adult August, R. Thompson, det JPOC. **DUBLIN: Clonskeagh** (O1730), flew in window, adult 24 June 1946, JRH; **Dublin**, adult 1861, CGB (BMNH); **Dundrum** (O1727), ♂ 15 June 1893, G. Low, conf. JPOC (NMI); **Marlay Park** (O1526), ♂♀ reared 7 June 1987, MK, det. JPOC; **R. Liffey** (O0335), Lucan, adult 22 August 1945, JRH; **Strawberry Beds** (O0735), tufa stream, lower region by R. Liffey, flat, larvae (v) 12 March 1984, IDW. **GALWAY: L. Corrib** (M1745), adults May 1964, MK. **KILDARE: Newbridge (Pollardstown) Fen** (N7715), ♂ 22 July 1989, KGMB/JAG, det. JPOC (NMI); **Sallins** (N8823) [R. Liffey], MVLT 2♂♂ 29 June 1977, MDCW, det. JPOC. **LIMERICK: R. Shannon** (R6663), Castleconnell, larva 6 April 1922, MEM Coll. (BMNH). **LOUTH: Castlebellingham** (O0595) [R. Glyde], ♂, conf. JPOC (NMI). **OFFALY: R. Boyne** [Tullamore R.] (N2525), Rahan, adult 17 July 1947, JRH. **ROSCOMMON: Mote Park** (M8960), ♂, conf. JPOC (NMI). **TIPPERARY: Cahir** (R0620), Ballyrado House, 2♂♂ 14 July 1986, KGMB, det. JPOC (NMI). **WEXFORD: New Ross** (S7229), adult remains on footpath, 5 July 2014, JPOC; **Wexford** (T0427), Edenvale [R. Sow], ♀ 11 July 1902, JJFXK, det. ECPC, conf. JPOC (NMS). **WICKLOW: Three Mile Water** (T2989), LT ♂ 20-21 July 1973, JPOC (NMI).

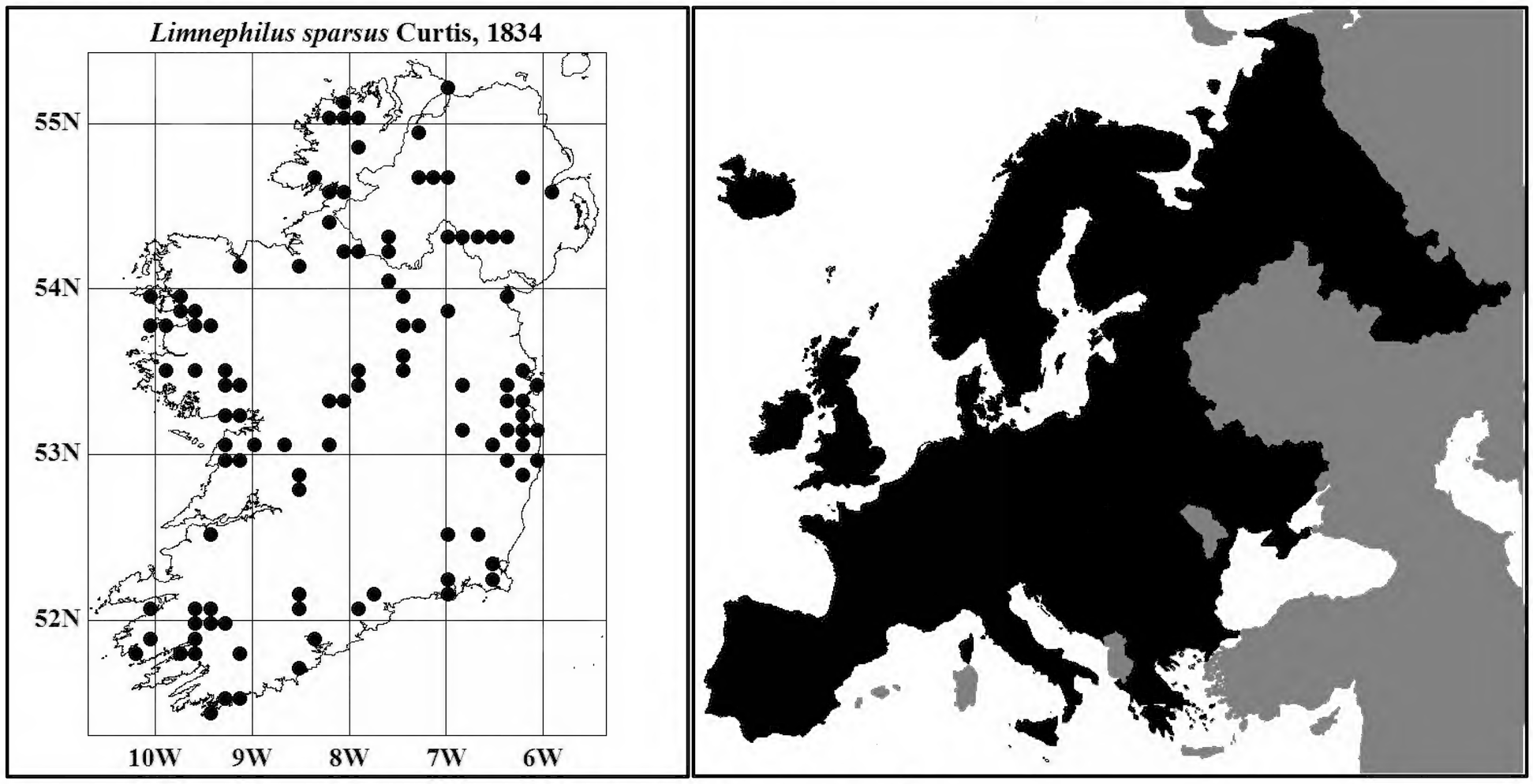
107. *Limnephilus sparsus* Curtis, 1834

Limnephilus sparsus is widely distributed in Ireland and adults are frequently taken in light-traps. The cased larvae occur in habitats that dry out during the summer. These include marshes, pools, puddles, streams and pond edges. Wallace (1991) noted that larvae can even live in such small habitats as hoof-prints in a wet field. The larvae are mainly shredders and the case is variable, being constructed of small plant pieces arranged tangentially or sand grains. The species is widespread in Europe.

Flight period: May–October (2 May–13 October). There is a summer diapause. **Counties and 10km squares:** Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry,

Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Leitrim, Louth, Mayo, Meath, Monaghan, Offaly, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (26/32). The species is known from 106 10km squares (106/1019).

FIGURES 262-263. Known Irish and European distributions of *Limnephilus sparsus*.



Published records

McLachlan, 1885 as *Limnophilus* (**ANTRIM:** Belfast (J3473)). *King, 1888a* as *Limnophilus* (**ANTRIM:** Belfast (J3473). **ARMAGH:** Armagh (H8745). **DONEGAL:** Cloghan (H0399) [R. Finn]. **GALWAY:** near Ma'am (L9653); Salthill (M2924). **KERRY:** Cloghereen (V9787); Deer Park (V9792); Denough [Deenagh] R. (V9792); Ross Castle (V9488); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084); Croft (L9884), Doogan (M0094), Kip (M0880) and Mount Brown [Kinlooey] (M0381) Laoghs. **SLIGO:** Mackree [Markree] Castle (G6925). **WESTMEATH:** Killinure (N0745); Shannon (N0341); Twy [Breensford] R. (N0943); Waterston [Waterstown] (N1045). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Morton, 1892b* as *Limnophilus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *Johnson, 1894* as *Limnophilus* (**ARMAGH:** Loughgilly (H9937), pale variety). *King and Halbert, 1910* as *Limnophilus* (**ARMAGH:** Acton (J0640); L. Gilly [lake near Loughgilly] (H9937). **CORK:** Ballygriffin Woods (R6500); Glandore (W2235). **DONEGAL:** Bruckless [River] (G7576); Coolmore (G8566). **DUBLIN:** Donabate (O2351); Harold's Cross (O1431) [Poddle R.]; R. Dodder near Tallaght (O1027); Sutton (O2539) (brackish pond). **GALWAY:** Ballinasloe (M8530) [R. Suck]; Cong (M1455) [L. Corrib]; Salthill (M2924). **KERRY:** Kenmare (V9471); Killarney district. **MAYO:** Newport (L9893) and Westport (L9984) districts. **MONAGHAN:** Emyvale (H6843). **SLIGO:** Markree (G6925) [Unshin R.]. **WATERFORD:** Cappagh L. (X1996); Dromana (X0994). **WESTMEATH:** Killinure (N0745); Shannon (N0341); Twy [Breensford] R. (N0943); Waterstown (N0946). **WEXFORD:** Johnstown Castle (T0216) [small

lakes]. **WICKLOW:** Enniskerry (O2217) [Glencullen R.]; Roundwood (O1903)). *Halbert, 1912* as *Limnophilus* (**MAYO:** Achill Island (F6405); Clare Island (L6985); Louisburgh (L8080); Mulranny (L8296)). *Mosely, 1930* as *Limnophilus* (**GALWAY:** Oughterard (M1343)). *Beirne, 1939* as *Limnophilus* (**DUBLIN:** Seapoint (O2229). **WICKLOW:** Kilmaeanogue [Kilmacanogue] marsh (O2514)). *Beirne, 1941* as *Limnophilus* (**DUBLIN:** Seapoint (O2229)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**WICKLOW:** L. Dan (O1502), adults). *O'Connor and Wise, 1984* (**KERRY:** L. Leane). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Derriana stream (V6274); L. Leane (V9686); R. Behy (V6589)). *O'Connor, Bond and O'Connor, 2013* (**FERMANAGH:** Upper L. Erne (H2731)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Mill L. (H2438); Upper L. Erne (H2339)).

Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), adult, CGB (BMNH); **Rea's Wood** (J1485), MT ♂ 19 July 1985, MB, det. JPOC. **ARMAGH: Loughgilly** (H9937), ♀ 14 September 1892, WFJ, det. JPOC (NMI). **CARLOW: Bahana Woods** (S7239), ♀ 14 June 1991, JPOC; **R. Barrow** (S7238), St Mullins, ♂ 20 May 2012, JPOC. **CAVAN: Corrakane L.** (H4000), small lake, LT 2♂♂ 4-5 August 1973, JPOC; **L. Sheelin** (N4182), Finnea, reed bed, ♂ 17 June 1973, JPOC, (N4785), Mount Nugent, ♂♀ 1 August 1986, CM/OSF (SINMNH); **R. Barora** (N6893), LT ♂♂ 1-2 August 1973, JPOC; **R. Owenmore** (H0626), ♂♂♀ 3 August 1973, JPOC; **R. Shannon** (G9726), LT ♀ 3-4 August 1973, JPOC. **CLARE: Ballynalacken area** (M1000), Burren, adults 2-14 June 1962, JDB (BMNH); **Cooleabeg** (M1602), Burren, ♀ 23 May, 1985, JPOC/MAOC, det. JPOC (NMI); **Lickeen Pond** (R1891), ♀ 10 July 1973, JPOC; **Lisdoonvarna** (M1000), LTS ♂ 7 September 1963 & ♂ 6 July 1964, ECPC, conf. JPOC (NMS); **L. Bunny** (R3796), MVLT adult 23 August 2003, GAC (per IDW); **L. Derg** (R6878), LT 7♂♂3♀♀ 2-3 September 1973, JPOC (NMI); **L. Inchiquin** (R2789), ♀ 4-6 June 1972, JPOC; **pond** (R6566), ♂ 2 September 1973, JPOC; **R. Bleach** (R6096), LT 4♂♂ 3-4 September 1973, JPOC; **R. Galey** (R0540), stream entering, ♀ 29 August 1973, JPOC. **CORK: Douglas R.** (W7169), MVT ♀ 25 August 1989, KGMB, det. JPOC; **Glandore** (W2235), 2♂♂, conf. JPOC (NMI); **Glengarriff Woods** (V9057), ♂♀ 6 July 1985, JPOC/MAOC, det. JPOC; **Liss Ard House** (W1331), south of Skibbereen, MVLT ♂♀ 24 August 1991, KGMB, det. JPOC; **L. Allua** (W1965), ♂ 30 May (NMI), ♂ 30 June & ♂ 16 August 1985, ♀ 29 May 1986, KGMB, det. JPOC; **Oysterhaven** (W6948), ♂ 27 July 1976, KGMB, det. JPOC; **Rahan** (W6398), marshy area near small river, light 4♂♂12♀♀ June-

September 1988, PS, det. JPOC; **Sherkin Island** (W0023), Slievemore, moorland, UVLT adult 8 August 1981, (W0225), Horseshoe Harbour, LT adult 8 June 1983, (W0225), Gneeves, ♀ 9 June 1983, SB, det. JPOC; **Toorgarriff** (W6991), MVLT 2♂♂ 16 August 1980, KGMB, det. JPOC (NMI). **DERRY: Derry** (C4215), ♂ August 1922, TVC, conf. JPOC (NMS). **DONEGAL: Bruckless** [River] (G7576), ♀ 11 July 1894, conf. JPOC (NMI); **Carrowtrasna** (C6742), ♂ 15 July 1981, DJOS, det. JPOC; **Coxtown** (G9271), lake near, ♀ 26 June 1981, JPOC; **Dunlewy** (B9119), LT ♂ *circa* 17 July 1980, JS, det. JPOC (NMI); **Glenveagh National Park** (C0423), at light ♂ 4 August 1982, COK, det. JPOC, (C0018), near Owenacoo R., MT 6♂♂8♀♀ 20-30 May 1998, MCDS, det. JPOC, (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT ♀ 10-30 July 1998, MCDS, det. JPOC; **Ray R.** (B9530), Falcarragh, ♂ 21 August 1987, TMN, det. JPOC (NMI). **DUBLIN: Castleknock** (O0837), MT ♂ 14-25 May, 1984, JPOC; **Donabate** (O2351), ♀, JNH, conf. JPOC (NMI); **Howth** (O3038), LT ♂2♀♀ 6 September 1983, KGMB, det. JPOC; **Seapoint** (O2229), adult 24 August 1938, BPB (BMNH). **FERMANAGH: Upper L. Erne** (H2731), Knockninny Quay, ♂ 9 October 2013, in spider's web, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Connemara National Park** (L7157), Letterfrack, ♂ 23 July 1982, JPOC, RLT ♂ 18 August 1982, COK, det. JPOC, at light ♂ 17 September 1982, NK, det. JPOC, acidophilous woodland, MTS 3♂♂3♀♀ 19 May-8 June 1994, 2♂♂♀ 30 June-20 July 1994, MCDS, det. JPOC; **Furbo** (M1922), ♂♀ 8 June 1980 and adults 7 May 1981, DMG, det. JPOC (NMI); **L. Corrib** (M2642), Keekill, ♂♀ 2 August 2003, KGMB, det. JPOC; **Ma'am** [Maam] (L9653), 2♂♂, JJFXK, conf. JPOC (NMI); **off coast** found in boat, 1-2 miles, ♂ August 1976, DMG, det. JPOC (NMI); **Oughterard** (M1343), adult 3-9 August 1926, MEM (BMNH); **Spiddal** (M1223), ♀ 4 June & ♂ 10 June 1981, DMG, det. JPOC. **KERRY: Cahirnane** (V9689), Killarney, adult 4 September 1937, BPB (BMNH); **Kenmare** (V9471), ♂♂ 29 May 1961, ECPC, conf. JPOC (NMS), adults 26-30 May 1961, JDB (BMNH); **Killarney**, ♂ 24 June & ♂ 28 June 1887, JJFXK, conf. JPOC (NMI), adult, E. Birchall (BMNH), adult 12 June 1902 (BMNH), adult July 1940, BPB, det. JRH; **Lauragh** (V7860), ♀ 8 July 1985, G. Meade, det. KGMB; **Loo Bridge** (W0881) [on the upper R. Flesk], ♂ June 1905, det. JPOC (NMI); **R. Cloghereen** (V9786), near Blue Pool, ♀ 28 May 1995, JPOC; **R. Flesk** (V9689), ♀ September 1956, EFB, det. JPOC (NMI); **stream** (V6274), near Derriana L., LT ♂♀ 1-2 July 1979, JPOC (NMI). **KILDARE: Newbridge (Pollardstown) Fen** (N7616), ♂ 11 July 1982, JPOC/MAOC, det. JPOC (NMI). **LEITRIM: Glenade** [L.] (G8246), ♂ 11 June 1983, KGMB, det. JPOC; **Killegar Estate** (H2507), LT ♂ 16 August 1991, SW, det. JPOC (NMI). **LOUTH: Castlebillingham** (O0698), marshes north of Dundalk road, adult 27 May 1967, ECPC (per IDW). **MAYO: Clare Island** (L6985), ♂ June 1911, WFJ, conf. JPOC (NMI), MT ♀, SF, det. JPOC (NMI); **Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT 3♀♀ 30 May-20 June 1997, MCDS, det. JPOC; **Mulranny** (L8296), ♀, WFJ, conf. JPOC (NMI); **R. Moy**

(G2418), Ballina, 2♀♀ 4 August 1985, JPOC. **MEATH: R. Blackwater** (N7739), Enfield, adult 11 August 1947, JRH. **MONAGHAN: Emyvale** (H6843), ♀♀ 20-30 July [1885-6], conf. JPOC, Morton Coll. (NMS); **Glasslough** (H7241), ♀ August 1892, KJM, conf. JPOC (NMS), ♂ 12 August 1973, JPOC. **OFFALY: Clorhane** (M9927), MVT 2♀♀ 12 August 1986, KGMB, det. JPOC. **TIPPERARY: Hayes Island** (M8604) [R. Shannon], Portumna, ♀ June 1921, JNH, det. JPOC (NMI). **TYRONE: Aghaboy** (H5581), LT ♀ 14 June 2014, KGMB, det. JPOC; **Creggan** (H6278), LT ♂♀ 14 June 2014, KGMB, det. JPOC; **Ulster-American Folk Museum** (H4379), near Strule R., LT ♀ 3 September 2014, VA, det. JPOC. **WATERFORD: Dunmore East** (S6800), ♂ 20 June 1983, JMCH, det. JPOC, The Woods, small stream, ♂ 27 June 1984, JPOC; **near Passage East** (S6811), hill, ♂ 12 June 1991, JPOC; **Woodstown** (S6905), ♀ 2 July 1983, *Phragmites* bed, JPOC (NMI). **WESTMEATH: Athlone** (N0341) [R. Shannon], ♀ 30 June & ♂ 21 July 1888, [JJFXK], conf. JPOC (NMI); **Ballynafid Lake** (N4160), ♀ 22 June 1989, JPOC; **Coosan** (N0544), Creaghduff, ♂♀ 17 August 1980, MVLT abundant ♂♂♀♀ 31 May 1981, JS, det. JPOC; **L. Ennell** (N4146), adult May 1964, MK; **L. Ree** (N0546), opposite Hare Island, ♀ 2 May 1977, JPOC. **WEXFORD: Irish National Heritage Park** (T0022), near Ferrycarrig Castle, marsh/*Betula*, ♀ 2 June 1986, JPOC; **Killoughrim Forest** (S9041), stream, ♂ 27 May & ♂ 4 June 1987, JPOC; **near Bridgetown** (S9810), ♂ 3 June 1987, JPOC; **Wexford** [Johnstown Castle (T0216)], ♀ 26 June 1902, JJFXK, conf. JPOC (NMI). **WICKLOW: Avondale** (T1986) [R. Avoca], ♂♀ 27 May 1989, JPOC; **Glencullen R.** (O1919), ♀ 22 July & LT ♀ 18-19 August 1973, JPOC; **Kilmacanogue marsh** (O2514), alder marsh, ♂♀ 15 August 1982, JPOC (NMI); **King's R.** (O0401), LT 5♂♂3♀♀ 22-23 July 1973, (O0001), LT ♂ 20-21 September 1973 (NMI), JPOC; **L. Dan** (O1502), ♀ 16 August 1972, ♀ 21 July, ♀ 12 August, ♂♀ 19 August & ♂♀ 24 August 1973, LT ♂♀ 21-22 June 1973, ♀ 23 May 1974, JPOC; **R. Avonbeg** (T1487), LT ♀ 19-20 September 1973, JPOC; **R. Liffey** (O0514), Ballysmuttan, ♀ 22 July 1973, JPOC; **Roundwood** (O1903), ♂ 2 October 1909, conf. JPOC (NMI); **Three Mile Water** (T2989), LT ♂ 20-21 July 1973, JPOC; **Upper Lake, Glendalough** (T1096), ♀ 20 September 1992, JPOC; **Vartry Reservoir** (O2004), Roundwood, LTS ♂ 11 July & 2♂♂ 14 August 1983, HAD, det. JPOC; **Vartry R.** (O2208), ♀ 24 August 1972, LT ♂ 19-20 August 1973, JPOC (NMI).

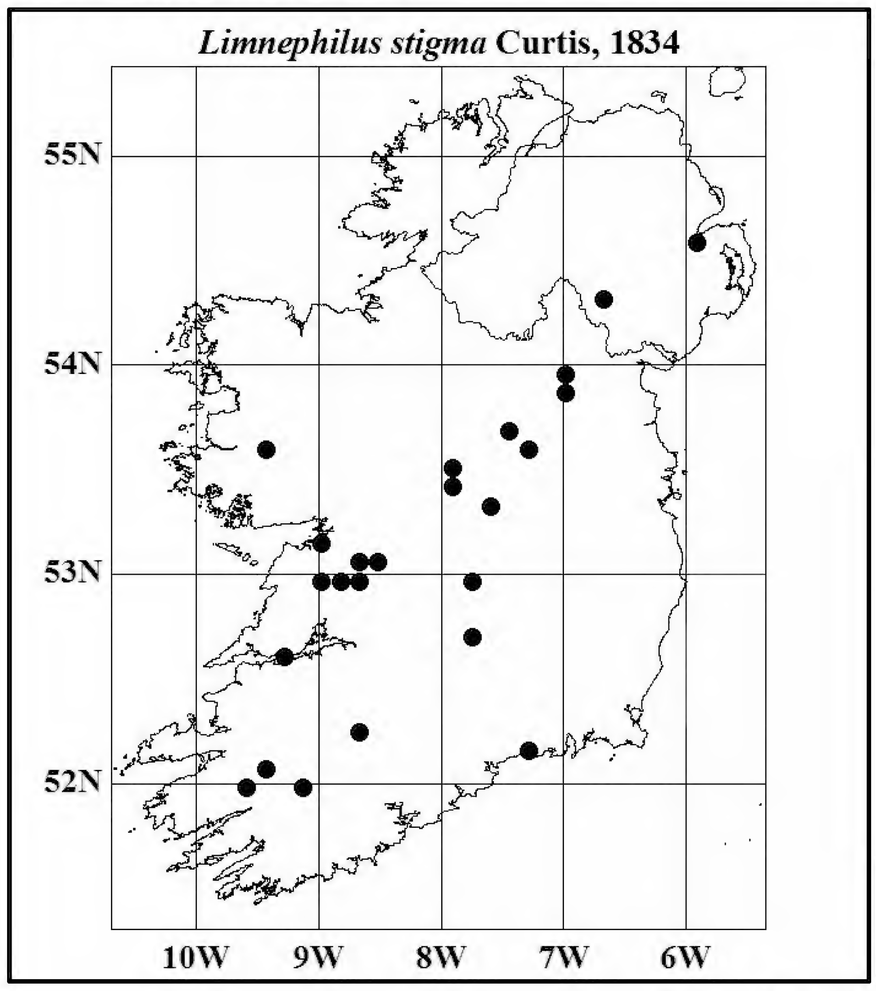
108. *Limnephilus stigma* Curtis, 1834

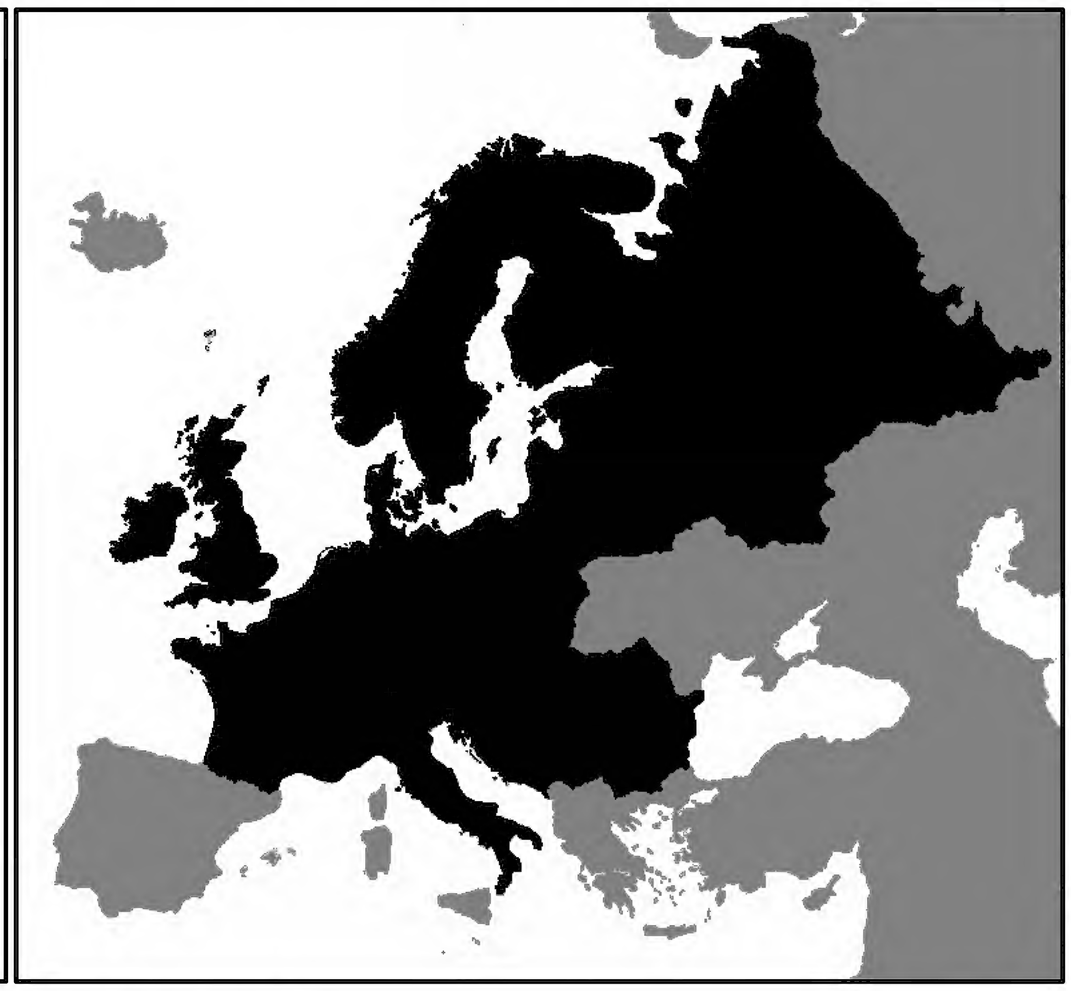
Limnephilus stigma is widely distributed in Ireland but as yet, there are no records from the north-west. The cased larvae occur in vegetation in bogs, lakes and rivers. The larvae are mainly shredders and the cases are sometimes massive and barrel-shaped composed of grass blades. The species is widespread in Europe but has not been reported from the Iberian Peninsula.

Flight period: May–October (29 May–2 October). There is an summer diapause.

Counties and 10km squares: Antrim, Armagh, Cavan, Clare, Cork, Galway, Kerry, Offaly, Tipperary, Waterford, Westmeath (11/32). The species is known from twenty-four 10km squares (24/1019).

FIGURES 264-265. Known Irish and European distributions of *Limnephilus stigma*.





Published records

King, 1888a as *Limnophilus* (**KERRY:** Killarney. **WESTMEATH:** Shannon (N0341); Waterston [Waterstown] (N0946)). *King and Halbert, 1910* as *Limnophilus* (**ARMAGH:** Armagh (H8745). **KERRY:** Killarney. **WESTMEATH:** R. Shannon (N0341); Waterstown (N0946)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Wise, 1984* (**KERRY:** Upper Lake (V9181)). *Reynolds, 1986* (**OFFALY:** L. Roe (N2630)). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Crushell, 2008* (**OFFALY:** Clara Bog, Shanley's L. soak lake (N2630)). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), pools). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lakes (R5088) 273m, (R5188) 262m. **CORK/KERRY:** upland lakes (W1881) 426m, (W1881) 429m. **GALWAY:** upland lakes (M5403) 282m, (M6701) 183m). *Hannigan and Kelly-Quinn, 2014* (**IRELAND:** raised bog).

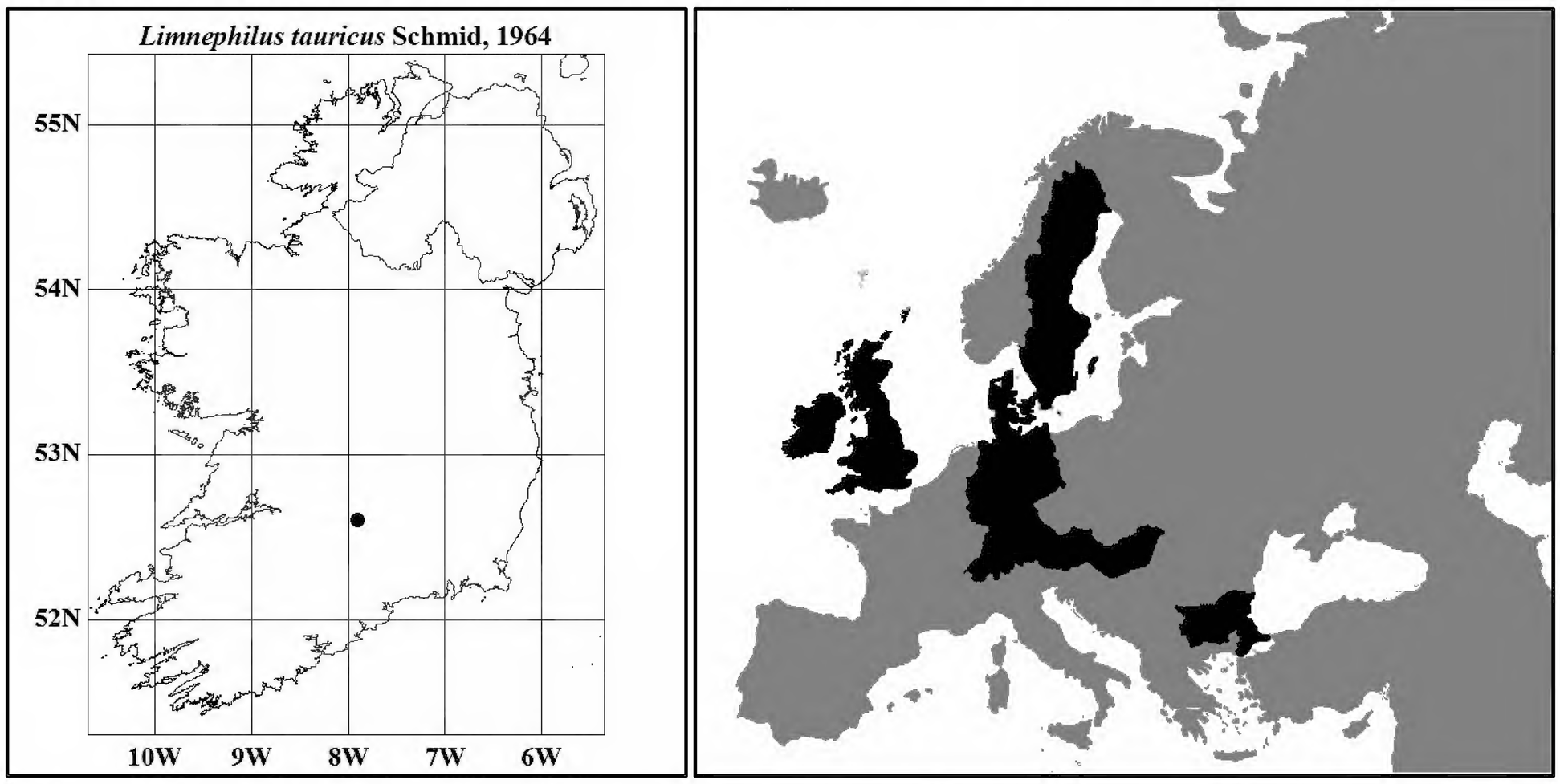
Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), adult 1885, CGB (BMNH). **ARMAGH: Armagh** (H8745), adult 3 August 1891, birches, WFJ, det. FCJF (HMAG). **CAVAN: L. Cuilcagh** (N6389), ♂ 2 October 1972, ♂ 27 September 1973, JPOC; **L. Sillan** (H6906), ♂ 31 July-1 August, 1973, JPOC; **R. Barora** (N6893), ♂ 1-2 August 1973, JPOC. **CLARE: Ballyeighter L.** (R3593), in woods, ♀ 29 May 1984, JPOC (NMI); **L. Derrygeeha** (R1556), ♂ 29 August 1973, JPOC. **CORK: Kilcoman** [Bog]

(R5811), MVLTS ♀ 20-21 June & ♀♀ 19-20 July 1992, KGMB, det. JPOC. **GALWAY: Cloghballymore** (M3913) [streams], MVLT ♂ 14 August 1996, KGMB, det. JPOC; **L. Mask** (M0957), Kilbeg Lower, LT ♂ 16 August 2014, MG. **KERRY: Crinnagh R.** (V9481), ♀ 4 August 1986, CM/OSF (SINMNH); **Kilbrean Lake** (W0093), 2♀♀ 7 September 1972, JPOC; **Upper Lake, Killarney** (V9181), ♂ 6 September 1972, JPOC (NMI). **OFFALY: L. Roe** (N2630), Clara Bog, larva 29 April 1984, among bog bean and moss, JR, det. JPOC (NMI). **TIPPERARY: R. Drish** (S2063), larvae 10 March 1992, (S1961), larvae 10 March 1992, (S1759), larvae 10 March 1992, DAG/JML, det. JML; **Roscrea** (S1686), ♀ 7 July 1986, KGMB, det. JPOC (NMI). **WATERFORD: Fennor** (S5201), at light, ♂♀ 12 July 1987, JPOC. **WESTMEATH: Athlone** (N0341), 3 adults 4 & 20 August 1888, JJFXK, det. FCJF (HMAG). **L. Ruddan** (N3868), larvae 20 June 1983, RM (per IDW).

109. *Limnephilus tauricus* Schmid, 1964

FIGURES 266-267. Known Irish and European distributions of *Limnephilus tauricus*.



Limnephilus tauricus is a local and very rare Irish species, only known from a single female taken at the Cabragh Wetlands, County Tipperary. These wetlands include ponds, streams and reed swamps. There are nutrient-poor marl fen and nutrient-rich floodplain fen. The light-trap site was adjacent to a calcium-rich, alkaline lake of area 1-2ha. A short stream leads from a spring directly west of the lake and the locality is in an area of carboniferous limestone bedrock (O'Connor and Bond, 1995). *L. pati* has been taken at the same site. The first larva of *L. tauricus* was discovered in Britain. It was found in a small dyke in a reed swamp cut in the past for thatch (Wallace, 1991). Subsequently, more larvae have been found and described from a site in Wales (Wallace *et al.*, 2009). There are scattered records of the species from central and northern Europe.

Flight period: June (28 June). Only one Irish adult recorded. Barnard and Ross (2012) give the British flight period as July–August.

County and 10km squares: Tipperary (1/32). The species is only known from one 10km square (1/1019).

Published record

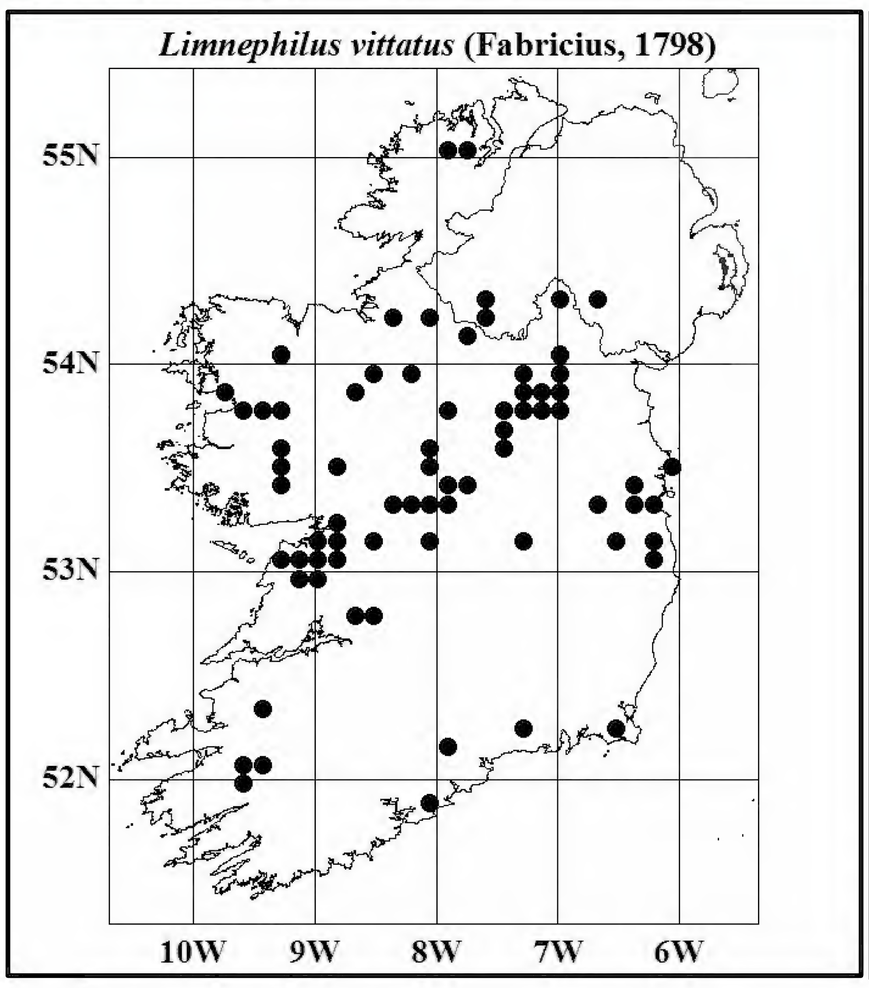
O'Connor and Bond, 1995 (**TIPPERARY:** Cabragh Wetlands near Thurles (S1054)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**TIPPERARY**). *Barnard and Ross, 2012* (**IRELAND**).

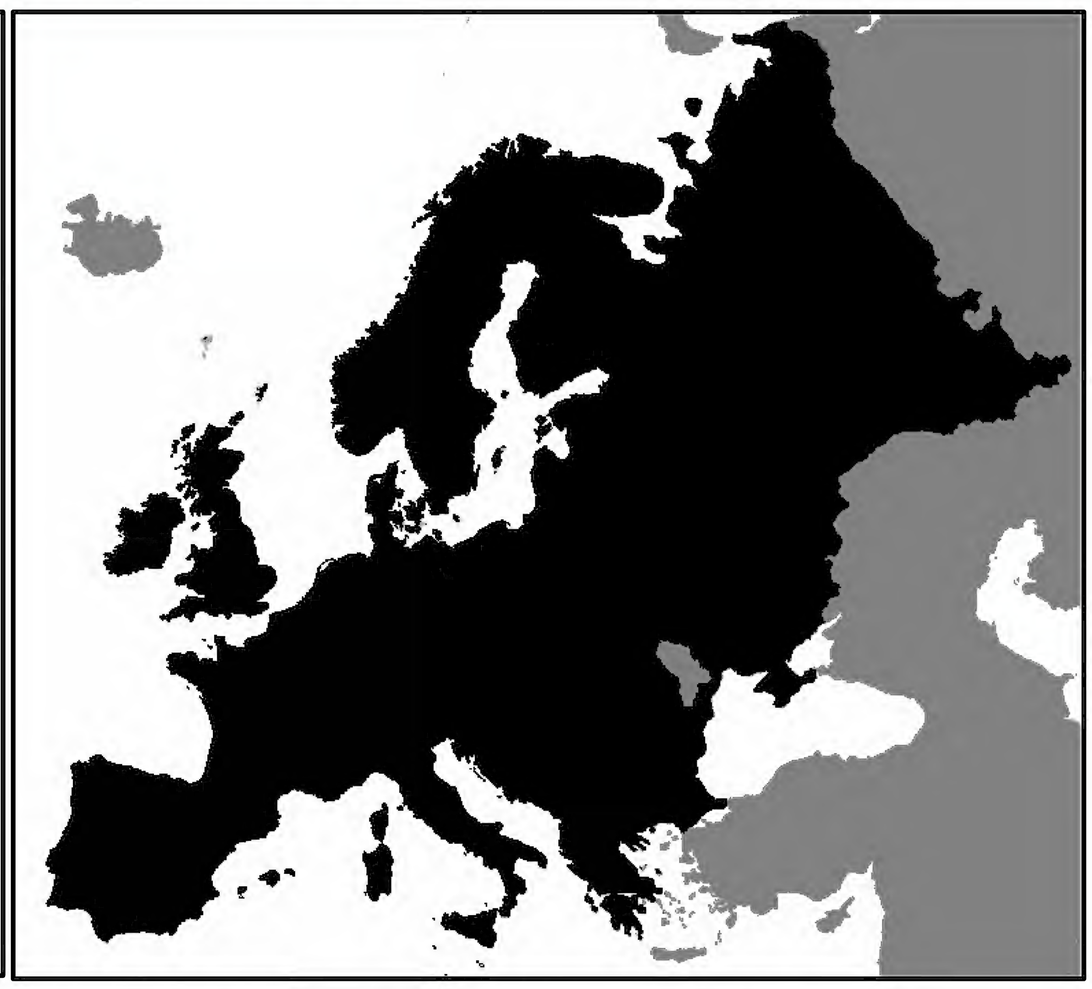
Unpublished records and voucher specimens

TIPPERARY: Cabragh Wetlands (S1054), near Thurles, MVLT ♀ 28 June 1994, KGMB, det. JPOC (NMI).

110. *Limnephilus vittatus* (Fabricius, 1798)

FIGURES 268-269. Known Irish and European distributions of *Limnephilus vittatus*.





Limnephilus vittatus is widely distributed in Ireland. The cased larvae occur in lakes, marshes, ponds, reservoirs, streams and turloughs. The case is composed of sand-grains, with the anterior typically notched in dorsal view. The larvae are mainly shredders. Normally the adults' forewings have a distinctive pattern, predominantly pale in the anterior half and dark in the posterior half. However some Irish specimens lack the pattern and instead have mottled wings. The species is widespread in Europe.

Flight period: May–October (19 May–30 October). There is a summer diapause.

Counties and 10km squares: Armagh, Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Longford, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Waterford, Westmeath, Wexford, Wicklow (22/32). The species is known from seventy-two 10km squares (72/1019).

Published records

King, 1888a as *Limnophilus* (**DUBLIN:** Tolka at Glasnevin (O1337). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **KERRY:** Ardagh Laogh (V9888);

Denough [Deenagh] R. (V9792); Ross Castle (V9488). **MAYO:** Kip (M0880) and Mount Brown [Kinlooey] (M0381) Laoghs. **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Bog of Allan [Allen] (N0639); Moate (N1838); Shannon (N0341). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Anon., 1894* as *Limnophilus* (**DUBLIN:** Rush (O2453)). *King and Halbert, 1910* as *Limnophilus* (**ARMAGH:** Mullinure (H8846). **DONEGAL:** L. Fern (C1824). **DUBLIN:** Glasnevin (R. Tolka) (O1337); Rush (O2453). **GALWAY:** Ballinasloe (M8530) [R. Suck]; Castlekirk [Castle Kirk, L. Corrib] (M1244); Cong (M1455) [L. Corrib]; Tuam (M4152). **KERRY:** Ardagh L. (V9888); Deenagh R. (V9792); Ross Castle (V9488). **MAYO:** Kip (M0880) and Mount Brown [Kinlooey] (M0381) Loughs. **MONAGHAN:** Emyvale (H6843). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WATERFORD:** Cappoquin (X0999); Glenshelane (S1203). **WESTMEATH:** Bog of Allen (N0639); Moate (N1838); Shannon (N0341). **WEXFORD:** Johnstown Castle (T0216) [small lakes]. **WICKLOW:** Enniskerry (O2217) [Glencullen R.]; Roundwood (O1903)). *Halbert, 1912* as *Limnophilus* (**MAYO:** Mulranny (L8296); Westport (L9984)). *Beirne, 1939* as *Limnophilus* (**DUBLIN:** Seapoint (O2229)). *Beirne, 1941* as *Limnophilus* (**DUBLIN:** Seapoint (O2229)). *Frost, 1942* as *Limnophilus* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Moriarty, 1973a* (**ROSCOMMON:** L. Key (G8000) = [G8304]. **SLIGO:** L. Gill (G7030) = [G7232]). *Moriarty, 1973b* (**SLIGO:** L. Gill (G7232)). *Moriarty, 1974* (**ROSCOMMON:** L. Key (G8304). **UNKNOWN COUNTIES:** waters upstream of L. Derg). *Speight, 1977* as *Limnophilus* (**ROSCOMMON:** Yew Pt. [Point] (N0146)). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7007), (H6907), (H7106), (H6906). **WICKLOW:** L. Dan (O1502), adults). *O'Connor and Wise, 1984* (**KERRY:** L. Leane). *Dauod, Bolger and Bracken, 1985a* (**WICKLOW:** Roundwood (Vartry) Reservoir (O2004)). *Dauod, Bolger and Bracken, 1985b* (**WICKLOW:** Roundwood (Vartry) Reservoir system). *Dauod, Bolger and Bracken, 1986* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *O'Connor, 1987* (**IRELAND:** widespread). *Bracken and Dauod, 1990* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *Speight, 1990* (**OFFALY:** All Saints Bog (N0010)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O Connor, Á. et al., 2004* (**GALWAY:** Caranavoodaun turlough (M4515); Roo West (turlough) (M3802)). *Millane, 2006* (**MAYO:** L. Carra (M1777)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**LONGFORD:** L. Forbes (N0882). **MAYO:** L. Conn (G1810). **ROSCOMMON:** Cloonagh L. (M5487). **WESTMEATH:** Coosan L. (N0544); L. Derravaragh (N4066)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Arney R. (H2336); Upper L. Erne (H2731)).

Unpublished records and voucher specimens

ARMAGH: Armagh (H8745), ♂, [WFJ], conf. JPOC (NMI); **Lowry's L.** (H9144), ♂2♀♀ 16 September 1895 (misidentified as *Limnephilus nigriceps*), [WFJ], det. JPOC (NMI). **CAVAN: L. Brackley** (H1921), ♀♀ 28 September 1973, JPOC; **L. Cuilcagh** (N6389), 5♀♀ 2 October 1972, ♂20♀♀ 27 September & LT ♀ 26-27 September 1973, 197 larvae exposed rocky shore & 63 larvae sheltered rocky shore, 29 March 1973, JPOC; **L. Levey** (H5002), 2♂♂4♀♀ 28 September 1973, JPOC; **L. Moneen** (G9828), ♂4♀♀ 29 September 1973, JPOC; **L. Mullagh** (N6785), 7♀♀ 4 October 1972 (NMI), 11 larvae exposed rocky shore & 7 larvae sheltered rocky shore, 3 April 1973, JPOC, larvae 1996/1997, JW; **L. Ramor** (N6186), 2♀♀ 27 September 1973, JPOC, (N6087), larvae 1996/1997, JW; **L. Sheelin**, 11 August 1947, JRH, IETS ♂♀ 24 August & ♂ 10 September 1972, IFT, det. JPOC, (N4786), ♂ 5 August 1973, (N4686), 17♀♀ 30 September 1973, (N4686), Crover, ♂ 12 September 1991, (N4182), LT 3♂♂♀ 22-23 September 1973, all JPOC, (N4183), Kelly's Bay, larva 7 May 1975, KFW, det. JPOC, (N4384), Kilnahard Bay, 59 larvae 8 May 1975, KFW, det. JPOC, IETS 1973/1974: (N4384), Kilnahard Bay, 19 adults, (N4183), Kelly's Bay, 2 adults, (N4685), Crover, 7 adults, all PG; **L. Sillan** (H7007), ♂4♀♀ August 1971, ♂ 1 October 1972, LTS 2♀♀ 28-29 September & ♂♀ 30-31 September 1972, (H7106), ♀ 11 August & ♂2♀♀ 1 September 1972, (H6906), ♂4♀♀ 30 August & 4♂♂6♀♀ 3 October 1972, 24 larvae exposed rocky shore, 130 larvae reed bed & 29 larvae sheltered rocky shore, 26 March 1973, LT ♂ 30 August 1972 (NMI), JPOC; **L. Tacker** (H6908), ♂18♀♀ 1 September 1972, JPOC. **CLARE: Aille R.** (R1397), Lisdoonvarna Spa, ♂ 25 May 1992, JPOC/MAOC; **Ballyeighter L.** (R3593), in woods, ♂ 29 May 1984, JPOC; **Ballynalacken area** (M1000), Burren, adults 2-14 June 1962, JDB, det. PHW (BMNH); **L. Bunny** (R3796), 10♂♂10♀♀ 31 August 1973, 2♂♂♀♀ 28 May 1984 (NMI), ♂ 21 May 1985, JPOC/MAOC, det. JPOC (NMI), larvae 1996/1997, JW; **L. Inchiquin** (R2789), ♀ 4-6 June 1972, ♀ 10 July & LT 5♂♂5♀♀ 31 August-1 September 1973, larva 19 March & reared ♂ 11 June 1973, JPOC; **pond** (R3290), 2♂♂ 30 August 1973, JPOC; **pond** (R6566), 7♂♂5♀♀ 2 September 1973, JPOC; **Rathborney R.** (M2004), Burren, ♂ 2 June 1992, JPOC; **R. Gourna** (R5166), ♂ 12 July 1973, JPOC. **CORK: L. Aderry** (W9373), adults July-August 1969, MK. **DONEGAL: Glenveagh National Park** (C0423), MVLT ♂♂ 11 August 1984, KGMB, det. JPOC (NMI). **DUBLIN: Belfield** (O1830), UCD, pond, ♀ 30 October 1972, JPOC; **Phoenix Park** (O1036), Quarry Pond, ♂ 14 June 1972, ♂♂ 31 July 1986, JPOC, 2♂♂2♀♀ 31 July 1986, CM/OSF (SINMNH); **Rush** (O2453), ♂ September 1894, conf. JPOC (NMI); **Seapoint** (O2229), LT adult September 1947, BPB, det. JRH. **GALWAY: Cloghballymore** (M3913) [streams], ♂ 14 August 1996, KGMB; **Coole Woods** (M4304), ♀ 1 June 1992, JPOC/MAOC, det. JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 28 March 1984, PB, det. JPOC; **Frenchpark** (M4114), ♂ 9 July 1996, KGMB; **Garryland** (M4103), MVLT ♂ 10 July 1996, KGMB, det. JPOC; **L. Acalla** [Callow L.] (M7234), adults July-August,

MK; **L. Cutra** (R4698), MVLT ♂ 30 August 1996, KGMB, det. JPOC; **L. Rea** (M6215), larvae 1996/1997, JW; **Roo Turlough** (M3802), ♂ 1 June 1996, F. Butler/JAG, det. JPOC. **KERRY: Kilbrean Lake** (W0093), ♀ 7 September 1972, JPOC; **Killarney**, ♀ 29a June & ♂ 7 July 1887, JJFXK, conf. JPOC (NMI), adult 1926, EFB, det. JRH. **LONGFORD: L. Forbes** (N0881), 18 larvae 20 July 1972, AFF, det. JPOC; **L. Ree** (M9963), 2 larvae 21 July 1972, AFF, det. JPOC; **R. Shannon** (N0332), dredge larva 13 July 1972, AFF, det. JPOC. **MAYO: Robe R.** (M1964), Ballinrobe, ♀ 19 May 1973, JPOC. **MEATH: L. Sheelin** (N4582), Gortport, 2♂♂9♀♀ 22 September 1973, JPOC. **MONAGHAN: Emyvale** (H6843), ♂♂ 2 September & 4-11 August 1916, Morton (NMS). **OFFALY: Backwood** (N4615), Cloneygowan, ♀♀, PA, det. JPOC; **Clorhane** (M9827), ♂♂♀ 19 September 1996, KGMB, det. JPOC; **Mongan Bog** (N0330), LT ♂♀ 24 August 1983, JAG, det. JPOC. **ROSCOMMON: L. Ree** (M9765), Inchmacdermot, 6 larvae 21 July 1972, AFF, det. JPOC; **R. Shannon** (N0440), 4 larvae 13 July 1972, AFF, det. JPOC. **SLIGO: L. Gara North** (G7101), larva 1996/1997, JW; **L. Gara South** (M6997), larva 1996/1997, JW. **TIPPERARY: Cahir** (R0620), Ballybrado House, ♀ 14 July 1986, KGMB, det. JPOC (NMI). **WATERFORD: Knockaderry Reservoir** (S4906), 2♂♂♀ 19 July 1987, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂, [JJFXK], conf. JPOC (NMI), 2♀♀ 5 July & adult 15 August 1888, JJFXK, conf. JPOC (NMI); **Coosan** (N0544), Creaghduff, ♂♀ 17 August 1980, JS, det. JPOC (NMI); **L. Derravaragh** (N4169), Coolure Bay, IETS 1973/1974 adult, PG; **L. Ennell**, adult 28 September 1946, JRH; **L. Owel**, adults July-August 1971, MK, (N4156), IETS, ♂ 30 August 1971, 2♂♂ 9 September 1971, IFT, det. JPOC, 1996/1997 larvae, JW, IETS 1973/1974: (N4056), Srudoora Island, adult, (N3657), near Carrickphilbin Island, 3 adults, (N3859), near Wattstown, 2 adults, (N4158), Gaynor Point, 3 adults, all PG; **L. Ruddan** (N3868), larvae 20 June 1983, RM, det. BW (per IDW); **L. Sheelin** (N4381), off Goreport Point, IETS 1973/1974 adult, PG; **R. Shannon** (N0538), downstream of Athlone, 10 larvae 13 July 1972, AFF, det. JPOC. **WICKLOW: near Oldcourt** (O0214), stream by hedge in field with *Callitriche* and watercress, larvae (iv, v) common, 10 March 1984, IDW; **Polluphuca (Blessington) Reservoir** (N9612), 6♂♂2♀♀ 24 July 1973, JPOC; **Roundwood** (O1903), 3♀♀ 29 September 1909, [JNH], conf. JPOC (NMI); **Roundwood Reservoir** (O2004), 5 larvae May 1982, ex brown trout stomach, B. Hayes, det. JPOC (NMI); **Russellstown Park** (N9610), ♂ 16 August 1981, JPOC/MAOC, det. JPOC, (N9611), stream feeding lake, upper section by old hedge of mature *Fagus* and *Quercus* in field, slow, muddy and weedy, larvae (v) common 10 March 1984, IDW; **Vallymount** (N9807), marsh, larvae 10 March 1978, JPOC, det. IDW (NMI); **Vartry Reservoir** (O1903), 17♂♂6♀♀ 21 July & ♂2♀♀ 19 August 1973, LT 19♂♂28♀♀ 19-20 August 1973, (O1904), 6♂♂3♀♀ 14 August 1972, (O2004), 3♂♂3♀♀ 24 August 1972, (O1905), 5♂♂♀ 1 August 1972, JPOC.

[*Allogamus auricollis* (Pictet, 1834)

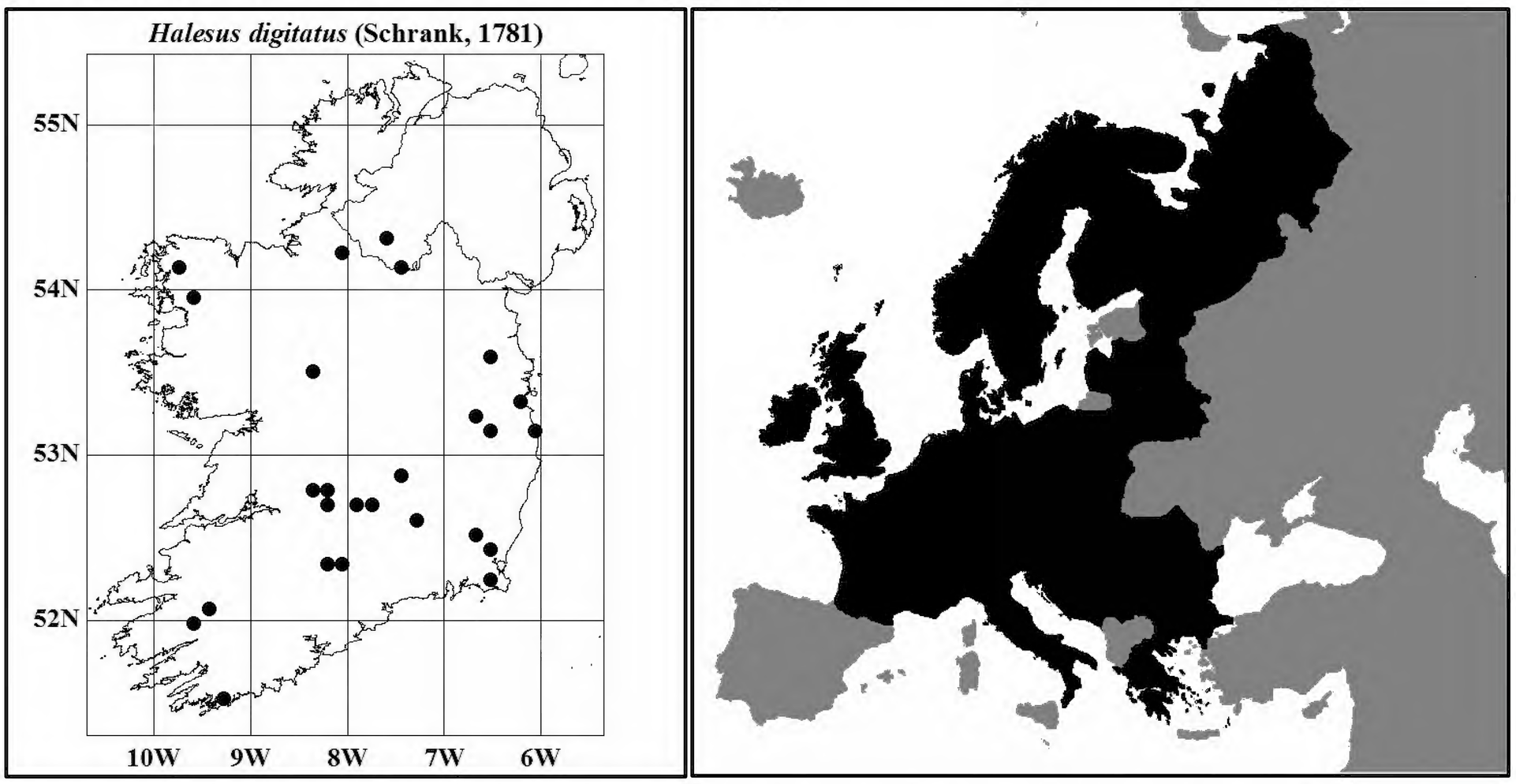
The record by Fahy (1972a) is based on larval material identified using Hickin (1967). It is not possible to reliably identify *Allogamus auricollis* with that work and the record is unacceptable.

Published records

Fahy, 1972a (unsafe larval identification (Wallace, pers. comm.)). *Murphy and Carter, 1984* as *Allogamus auricollis* (grp) Pictet. (unsafe larval identification). *Carter and Murphy, 1993* as *Allogamus auricollis* sp. (Pictet) (unsafe larval identification).]

111. *Halesus digitatus* (Schrank, 1781)

FIGURES 270-271. Known Irish and European distributions of *Halesus digitatus*.



Halesus digitatus is widely distributed but with few records from the west and north-west of Ireland. This is probably due to under-recording rather than a genuine absence as suitable habitats exist in these areas. The adult has a late flight period and is not often taken therefore by collectors. The cased larvae occur in streams and rivers. They are mainly shredders and the cases are usually made of leaf fragments often with sticks attached for protection from hungry fish. Malicky (2005) gives two subspecies but only the ssp. *digitatus* occurs in Ireland. *Halesus digitatus* is widespread in most of Europe.

Flight period: September–November (24 September–6 November).

Counties and 10km squares: Cavan, Cork, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Laois, Mayo, Meath, Tipperary, Wexford, Wicklow (14/32). The species is known from twenty-six 10km squares (26/1019).

Published records

Beirne, 1939 (**DUBLIN:** Seapoint (O2229)). *Beirne, 1941* (**DUBLIN:** Seapoint (O2229)). *Fahy, 1972a* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Wise, 1984* (**KERRY:**

Muckross Lake). *O'Connor, 1987* (**CAVAN**. **DUBLIN**. **KERRY**. **KILDARE**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Bracken, 1998* (**KERRY:** Killarney). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 23 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Donohue et al., 2009* (**IRELAND**). *Anon., 2011* (**WEXFORD:** Assaly R. (T0513); R. Slaney (S9830)). *Gammell, 2011* (**WEXFORD:** Crory Lower Stream, Edenvale (T0327); R. Sow, Edenvale (T0427)). *O'Connor and Nelson, 2012* (**DUBLIN**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); Muckross Lake (V9485), (V9685); R. Flesk (V9789)). *O'Connor, Bond and O'Connor, 2013* (**FERMANAGH:** R. Erne (H2637); Woodford R. (H3419)). *O'Driscoll et al., 2013* (**MAYO:** Glennamong (F9303), (F9403)). *O'Driscoll et al., 2014* (**MAYO:** Glennamong R. (F9303); Srahrevagh R. (G0004)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8467), (R8667), (R8168); R. Tar (R9419), (R9019), (R8919), (R9117), (R9416)). *Anon., 2015a* (**MAYO:** Ballycroy National Park (F8519)).

Unpublished records and voucher specimens

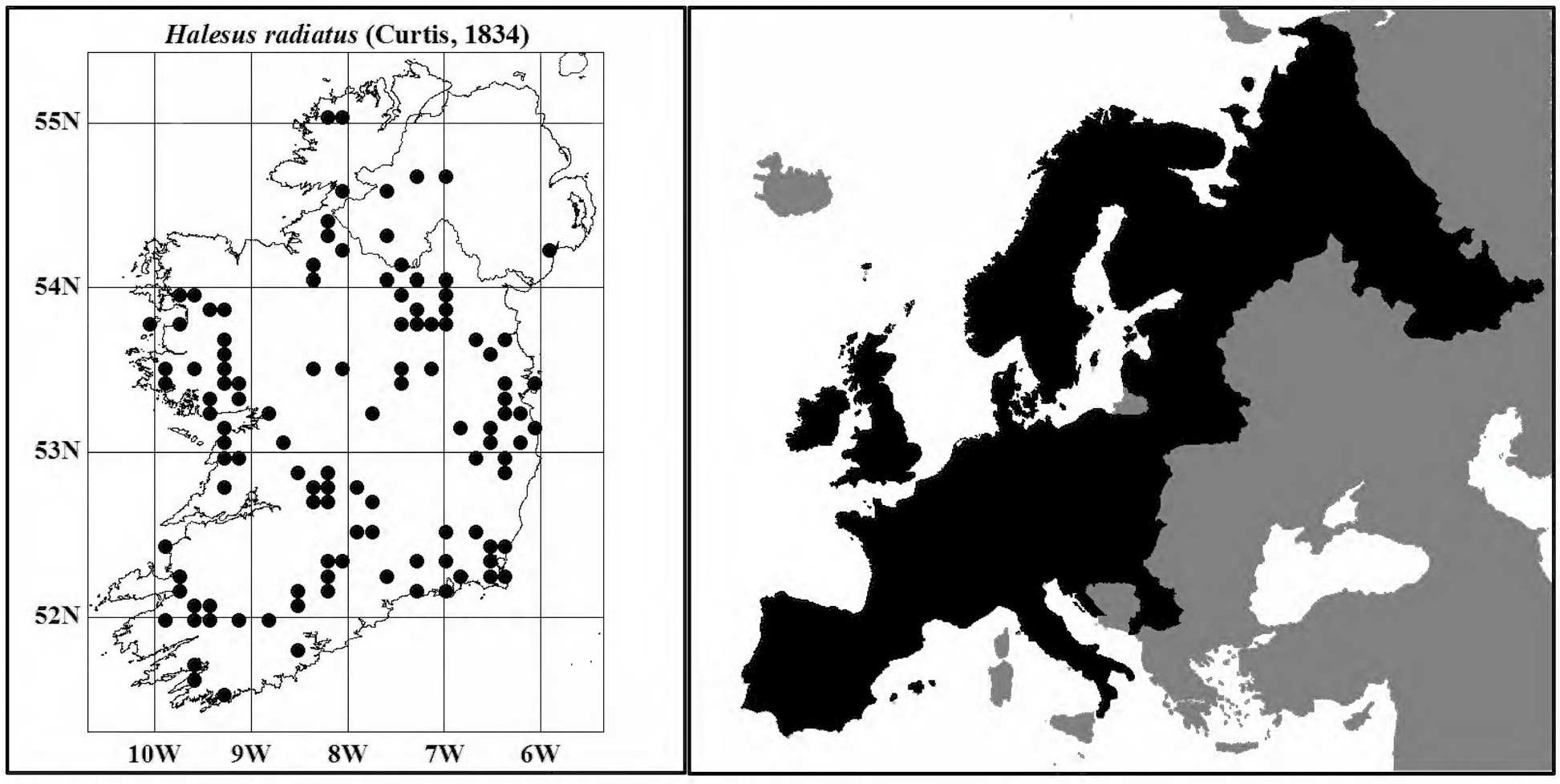
CAVAN: R. Black (H0129), ♀ 28 September 1973, JPOC; **R. Shannon** (G9726), LT 7♂♂ 28-29 September 1973, JPOC (NMI). **CORK: L. Ine** [Hyne] (W0829), stream, larva 27 January 1983, MJC, det. JPOC. **DUBLIN: Seapoint** (O2229), ♂♀ 2 October 1937, BPB, conf. JPOC (BMNH). **FERMANAGH: R. Erne** (H2637), Cloonatrig, Bellanaleck, LT 3♂♂ 9-10 October 2013, JPOC/MAOC, det. JPOC (NMI); **Woodford R.** (H3419), ♂ 9 October 2013, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Killian R.** (M7449), Carrowmore, road bridge u/s confluence with Shiven R., larva 12 May 2012, MG. **KERRY: Muckross Lake** (V9485), LT ♂ 11-12 October 1972, JPOC (NMI). **KILDARE: Grand Canal** (N9225), near Devonshire Bridge, ♂ 24 September 1977, MDCW, det. JPOC. **KILKENNY: Kilkenny** (S5055) [R. Nore], Dukes Meadow, ♀ 6 November 1987, BMOH, det. JPOC. **LAOIS: R. Nore** (S4276), Tallyho Bridge, larvae 16 August 2004, PS. **MEATH: Ashbourne** (O0459), light ♀ 1 November 1972, JPOC. **TIPPERARY: Breagagh R.** (S1458), larvae 6 July 1992, DAG/JML, det. JML; **Cabragh** (S1156) [R. Suir], at light, 2♂♂ 12 October 1986, S. Buckley, det. JPOC. **WEXFORD: Killoughrim Forest** (S9041), stream, larva 3 July 2014, JPOC/MAOC, det. JPOC. **WICKLOW: Glen of the Downs** (O2611), ♀ 27 September 1987, JPOC; **stream** (O0215), larva 10 March 1978, JPOC.

112. *Halesus radiatus* (Curtis, 1834)

Halesus radiatus is common and widely distributed in Ireland. Mosely (1939) noted that very small adults are found in the acid waters of various parts of the island. The cased larvae occur in lakes, ponds, rivers and streams. The larvae are mainly

shredders and the cases often are similar to those of *H. digitatus*. However, they also consume animal prey (Sangpradub and Giller, 1994). In the Glenfinnish River, County Cork, there was delayed egg hatching and the appearance of first instars over several months. *H. radiatus* was univoltine there (Giller, O'Connor and Kelly-Quinn, 1998; Sangpradub, Giller and O'Connor, 1999). The species is widespread in Europe.

FIGURES 272-273. Known Irish and European distributions of *Halesus radiatus*.



Flight period: (January) July–November (22 July–11 November). An adult was also taken on 20 January.

Counties and 10km squares: Carlow, Cavan, Clare, Cork, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Leitrim, Louth, Mayo, Meath, Offaly, Roscommon, Sligo, Tyrone, Tipperary, Waterford, Westmeath, Wexford, Wicklow (24/32). The species is known from 114 10km squares (114/1019).

Published records

McLachlan, 1874-1884 (**IRELAND**). *King, 1888a* (**DUBLIN:** Howth (O3038). **GALWAY:** Ma'am Burn (L9653). **KERRY:** Cloghereen (V9787); Horses' Glen (V9981)). *King and Halbert, 1910* (**DUBLIN:** Howth (O3038). **GALWAY:** Maam R. (L9653). **KERRY:** Cloghereen (V9787); Horses Glen (V9981). **LOUTH:** Drogheda (O0975) [R. Boyne]. **WICKLOW:** L. Dan (O1502); Roundwood (O1903)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Cashel Bay (L7942); Inverin (M0822)). *Kimmins, 1932* (**DOWN:** Newcastle (J3731) [Shimna R.]). *Mosely, 1939* (**GALWAY**). *Hickin, 1967* (**GALWAY**). *Partridge and Foy, 1972* (unsafe larval determination). *Fahy, 1972a* (**MAYO:** (F9505)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Fahy, 1972c* (**MAYO:** Altahoney R. (F9605)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *McCarthy, 1977* (unsafe larval identification). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan [H7106], adults. **WICKLOW:** L. Dan (O1502), adults).

Dowling, O'Connor and O'Grady, 1981 (**KERRY:** R. Caragh (V7186)). *O'Connor and Wise, 1984* (**KERRY:** Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Giller and Sangpradub, 1993* (**CORK:** Glenfinnish R.). *Sangpradub and Giller, 1994* (**CORK:** Glenfinnish R.). *Tierney, Kelly-Quinn and Bracken, 1998* (**WICKLOW:** no sites given for the species). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706)). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Laune). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 106 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1673)). *McKie et al., 2008* (**IRELAND**). *Becerra Jurado et al., 2009* (**TIPPERARY:** ponds (S0540), (S1640). **WATERFORD:** ponds (S4623), (S5202). **WEXFORD:** pond (T0830)). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *Anon., 2011* (**WEXFORD:** Assaly R. (T0513); Ballyfinoge Stream (T0414); Ballyvoleen R. (S9625); Ballyvalloge Stream (S9823); Rathdowney Stream (T0913); Tinnokilla Stream (S9729)). *Gammell, 2011* (**WEXFORD:** R. Sow, Edenvale (T0427)). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CORK/KERRY:** upland lakes (W1881), 426m, (W1881), 429m. **GALWAY:** lowland lakes (M0430), (M0329), (M0229), (M0927), (M0927)). *Little and Free, 2013* (**DONEGAL:** L. Golagh (G9666); L. Nacung (B8920). **GALWAY:** L. Corrib (M2541). **LEITRIM:** L. Melvin (G9054)). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); Doolough (V9585); Muckross Lake (V9485)). *O'Connor, Bond and O'Connor, 2013* (**FERMANAGH:** R. Erne (H2637); Upper L. Erne (H2639); Woodford R. (H3419)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *Baars et al., 2014* (**IRELAND:** recorded in 11 of 12 upland peatland lakes). *Anon., 2015a* (**CORK:** Glengarriff Nature Reserve (V9256). **MAYO:** Ballycroy National Park (F8407); Cong (M1455). **WICKLOW:** Wicklow Mountains National Park (O0101), (T1196)).

Unpublished records and voucher specimens

CARLOW: St Mullins (S7238), stream, 7 larvae 5 July 2014, MAOC/JPOC, det. JPOC. **CAVAN: Barora R.** (N6894), branch, 2♂♂ 31 August 1972, ♂ 27 September 1973, (N6889), branch, ♂6♀♀ 4 October 1972, JPOC; **L. Cuilcagh** (N6389), ♂2♀♀ 2 October 1972, LT 9♂♂♀ 26-27 September 1973, JPOC; **L. Moneen** (G9828), LT 11♂♂♀ 28-29 September 1973, JPOC; **L. Mullagh** (N6785), 9♂♂ 4 October 1972,

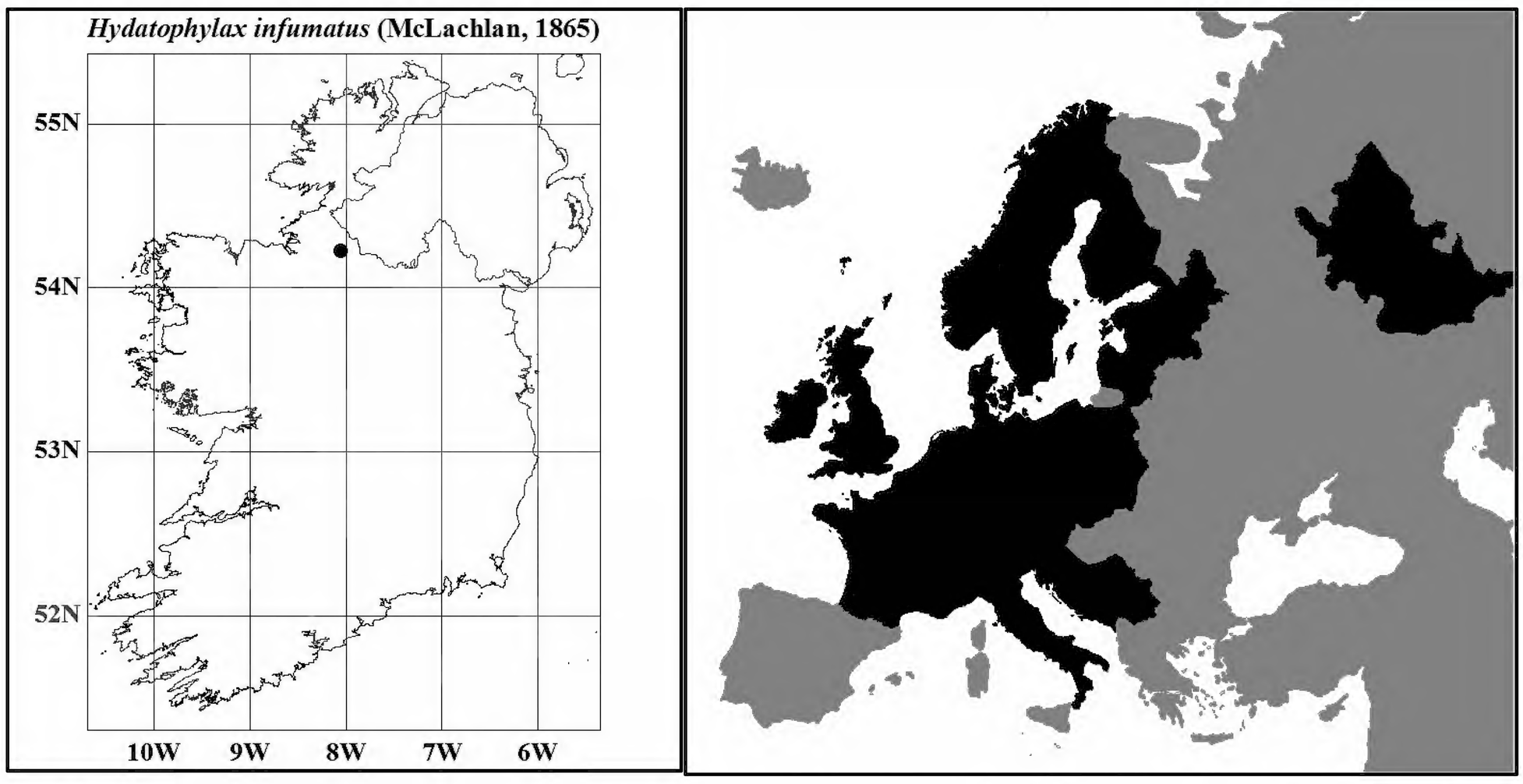
♂♀ 27 September 1973, JPOC; **L. Ramor** (N6186), ♂♀ 27 September 1973, JPOC; **L. Sheelin** (N4686), 2♀♀ 30 September 1973, JPOC; **L. Sillan** (H7106), 14♂♂10♀♀ 30-31 September & ♂♂♀♀ light 1 October 1972 (NMI), JPOC; **R. Annalee** (H6810), 4♂♂ 27 September 1973, (H4511), Ballyhaise, 4♂♂4♀♀ 3 October 1972, LT 2♂♂ 27-28 September 1973, (H6808), 8♂♂7♀♀ 30 September 1972, (H6806), above L. Sillan, ♀ 31 September 1972, (H7205), ♂ 27 September 1973, JPOC; **R. Blackwater** (N6283), exiting L. Ramor, ♂ 27 September 1973, (H2515), ♂ 29 September 1973, JPOC; **R. Erne** (H3501), ♀ 29 September 1973, JPOC; **R. Inny** (N4081), Finnea, LT 2♂♂ 30-31 September 1973, JPOC; **R. Shannon** (G9726), LT 4♂♂♀ 28-29 September 1973, JPOC (NMI). **CLARE: Lickeen Lake** (R1891), larvae 1996/1997, JW; **L. Derg** (R6979), LT 4♂♂ 2-3 September 1972, JPOC; **L. Doo** (R1171), LT 2♂♂♀ 29-30 August 1973, JPOC; **L. Inchiquin** (R2789), larvae 1996/1997, JW; **R. Bleach** (R6096), LT 3♂♂♀ 3-4 September 1973, JPOC; **R. Caher** (M1608), LT 6♂♂ 30-31 August 1973, JPOC; **R. Fergus** (R2591), above L. Inchiquin, ♀ 1 September 1973, JPOC; **stream** (R1472), entering L. Doo, ♂ 29 August 1973, JPOC. **CORK: Durrus** (V9441), ♀ 19 August 1977, JMCH, det. JPOC; **Liss Ard House** (W1331), south of Skibbereen, MVLT ♀ 24 August 1991, KGMB, det. JPOC; **L. Ine** [Hyne] (W0829), inlet stream, larvae 27 January 1983, MJC, det. JPOC; **Rahan** (W6398), marshy area near small river, light 3♀♀ June-September 1988, PS, det. JPOC; **R. Araglin** (R8703), larvae 1988-1990, NS; **Riverstick** (W6659), MVLT 2♂♂ 12 October 1984, KGMB; **Toorgarriff** (W6991), MVLT ♀ 16 August 1980, KGMB, det. JPOC (NMI). **DONEGAL: Glenveagh National Park** (C0019), ♂♂♀♀ 26 August 1982, DD, det. JPOC (NMI). **DOWN: Newcastle** (J3731) [Shimna R.], ♂ 15 September 1930, Miss V. Larminie, conf. JPOC (BMNH). **DUBLIN: Bohernabreena** (O0921), Upper Reservoir, ♂♂♀♀ September-October 1987, MK, det. JPOC; **Castleknock** (O0837), light ♂ 14 October 1983 & ♀ 1 October 2015, JPOC/MAOC, det. JPOC; **Clondalkin** (O0631), in house, ♂ 25 September 1981, MAOC, det. JPOC; **Owendoher R** (O1324), ♀ 27 September 1977, JPOC; **R. Liffey** (O0735), Strawberry Beds, among debris of emergent vegetation, larvae (v), 12 March 1984, IDW. **FERMANAGH: R. Erne** (H2637), Cloonatrig, Bellanaleck, LT 2♂♂ 9-10 October 2013, JPOC/MAOC, det. JPOC; **Upper L. Erne** (H2639), Bellanaleck Quay, ♂ 10 October 2013, JPOC/MAOC, det. JPOC (NMI); **Woodford R.** (H3419), 7♂♂5♀♀ 9 October 2013, hiding in crevices between bricks of a building, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Ballinafad** (L7946), east side of An Abhainn Mhór ["Big river"], LT ♂ 3 October 2014, GM/CC, det. GM; **Cashel Bay** (L7942), Connemara, ♀ 6-16 September 1929, MEM (BMNH); **Connemara National Park** (L7157), at light 2♂♂ 17 September 1982, NK, det. JPOC (NMI), (L7455), Polladirk R., larvae 1991, SV, conf. JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 17 January 1984, PB, det. JPOC; **Inverin** (M0822), adults 17 July-28 August 1926 & 26 August-6 September 1929, MEM (BMNH); **Killian R.** (M7449), Carrowmore, road bridge u/s confluence with Shiven R., 3 larvae 12 May

2012, MG; **L. Corrib** (M1745), adults August-October 1964, MK, (M2531), Hurney's Point [near Moycullen], 2♂♂ 16 September & 2♂♂ 25 September 2003, (M2642), Keekill, LTS ♂♀ 2 August 2003, KGMB, det. JPOC. **KERRY: Crinnagh R.** (V9481), ♂ 4 August 1986, CM/OSF (SINMNH); **Doolough** (V9585), LT ♂♀ 12-13 October 1972, JPOC; **Farres** (Q8206), Castlemaine, light ♂ 20 January 1989, D. A. Lavery, det. JPOC (NMI); **Kerryhead** (Q7132), pupa 1982, det. JRAG (BMAG) (per IDW); **Killarney**, ♂ 22 July 1887, JJFXK, conf. JPOC (NMI), ♂ July 1925, 20 October 1946, EFB, det. JRH (NMI); **Muckross Lake** (V9485), LT ♀ 11-12 October 1972, JPOC (NMI), (V9685), Goleen, larva, June 1974, IDW; **R. Curraheen** (Q7811), LT 4♂♂ 17-18 September 1973, JPOC; **R. Laune** (V8991), ♀ 13 October 1973, JPOC; **Torc stream** (V9684), near mouth, larvae June 1974, IDW. **KILDARE: Pollardstown (Newbridge) Fen** (N7715), ♂♂♀♀ 8 September 1991, JPOC. **LEITRIM: Bonet R.** (G8444), larvae 25 June 1991, (G8741), larvae 26 March 1991, (G8738), larvae 26 March 1991, (G8637), larvae 25 March 1991, DAG/JML, det. JML. **MAYO: Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults August-October 1964, MK; **Clare Island** (L6985), MT ♂♀♀, SF, conf. JPOC (NMI); **Croagh Patrick** (L8981), Carrowmacloughlin, MVLT ♂♀ 3 August 1989, KGMB, conf. JPOC; **L. Carra** (M1673), adults August-October 1964, MK; **L. Mask** (M1259), (M1465), adults August-October 1964, MK. **MEATH: Ashbourne** (O0459), at light, ♂ 11 November 1972, ♂♀ 11-12 September & ♂♀ 19 October 1973 (NMI), stream, ♂ 1 November 1972, DAM, det. JPOC; **L. Sheelin** (N4582), Gortport, ♂ 22 September 1973, JPOC; **R. Boyne** (N9271), Stackallen, adult 6 September 1946, JRH, (N8868), 3♂♂ 1 October 1992, JPOC. **OFFALY: R. Brosna area** (N1825), Pollagh Bridge, adult 5 September 1947, JRH. **ROSCOMMON: Rindown Wood** (N0054), ♂ 5 October 1999, KGMB, conf. JPOC (NMI). **SLIGO: L. Arrow** (G7711), adult August 1912, Mosely Coll. (BMNH), adults August-October 1964, MK; **L. Bo** (G7918), adults August-October 1964, MK. **TIPPERARY: Breagagh R.** (S1458), larvae 10 March & 6 July 1992, DAG/JML, det. JML; **Brownstown R.** (S1665), larvae 10 March & 6 July 1992, DAG/JML, det. JML; **Kilmastulla R.** (R7269), (R7169), larvae/adults 1976-1977, MAOC; **Nenagh** [Nenagh R.] (R8779), adult, JRH; **R. Black** (S1957), larvae 6 July 1992, DAG/JML, det. JML; **R. Clover** (S1959), larvae 10 March & 6 July 1992, DAG/JML, det. JML; **R. Drish** (S2163), larvae 6 July 1992, (S2063), larvae 6 July 1992, (S1961), larvae 10 March & 6 July 1992, (S1759), larvae 10 March & 6 July 1992, DAG/JML, det. JML; **R. Suir** (S1267), larvae 10 March 1992, DAG/JML, det. JML. **TYRONE: Ballinderry R.** (H6980), Dunnamore Walk, LT 7♂♂2♀♀ 20 September 2014, JPOC/MAOC, det. JPOC; **Sloughan Glen** (H2774), LT 2♀♀ 2 September 2014, KGMB, det. JPOC; **Ulster-American Folk Museum** (H4379), near Strule R., LT ♂ 3 September 2014, VA, det. JPOC. **WATERFORD: Mahon Falls** (S3108), top of stream in bog near the Falls, 5 larvae 25 May 1997, JPOC; **Portally Cove** (X6799), stream, 5 larvae 24 May 1997, JPOC. **WESTMEATH: L. Ennell** (N4149), adult 28

September 1946, JRH, (N3843), larvae 26 June 1983, RM, det. BW (per IDW); **R. Deel** (N5953), larvae July 1991, DAG/JML, det. JML; **R. Shannon**, L. Key-Athlone, ♀ late September, L. Tent (T. T. Macan, pers. comm.). **WEXFORD: J. F. Kennedy Park** (S7219), larva 7 July 2014, MAOC/HOC, det. JPOC; **Killoughrim Forest** (S9041), stream, 2 larvae 3 July 2014, JPOC/MAOC, det. JPOC; **Oaklands Wood** (S7125), stream, larva 29 June 2014, JPOC/MAOC, det. JPOC; **stream** (S7806), Pollfur Bridge near Fethard, 5 larvae 30 June 2014, MAOC/JPOC, det. JPOC; **Urrin R.** (S8943), bridge near Mangan, 7 larvae 3 July 2014, MAOC/JPOC, det. JPOC. **WICKLOW: Glen of the Downs** (O2611), main stream, larvae 11 March 1984, IDW; **King's R.** (O0401), LT 10♂♂5♀♀ 20-21 September 1973, JPOC (NMI); **L. Dan** (O1502), ♂♀ 30 September 1909, conf. JPOC (NMI), ♂ 24 August & ♂ reared 6 September 1972, LT 2♂♂♀ 22-23 September 1972, JPOC; **near Oldcourt** (O0214), stream by hedge in field with *Callitriche* and watercress, a few larvae (v) 10 March 1984, IDW; **R. Glencullen** (O1919), LT ♂ 18-19 August 1973, JPOC; **R. Ow** (T0981), ♂ 20 September 1973, JPOC; **Russelltown Park** (N9610), stream feeding lake, lower section, larvae, 10 March 1984, (N9611), stream feeding lake, upper section by old hedge of mature *Fagus* and *Quercus* in field, slow, muddy and weedy, one larva (iv) 10 March 1984, IDW; **stream** (O0110), near Lackan, larvae (v) 10 March 1984, IDW; **stream** (S8695), ♂ pupa 20 September 1973, JPOC.

113. *Hydatophylax infumatus* (McLachlan, 1865)

FIGURES 274-275. Known Irish and European distributions of *Hydatophylax infumatus*.



Hydatophylax infumatus is a local Irish species and only a single adult has been taken on the upper River Shannon in County Cavan. On the evening of the 3 August 1973, the specimen was attracted with two other caddisflies to a Heath portable light-trap situated on the river bank. When visited at dusk, the three adults were walking

around the rim of the trap and were flicked inside by the author. Subsequently, there was heavy rain and when the trap was opened the following morning, only these three caddisflies were found inside it. In Britain, Barnard and Ross (2012) describe *H. infumatus* as a secretive species, rarely encountered. The cased larvae live there among woody debris on which the larvae feed. They occur in flowing water or occasionally on stony lake shores (Wallace, Wallace and Philipson, 2003). Since the larva is distinctive in having only a central anterior median sclerite on the metadorsum (Fig. 276), a search for this stage may be more productive in yielding further Irish records. The larval case is shown (Fig. 277). The species occurs in much of Europe.

Flight period: August (3 August). Only a single Irish adult recorded. Barnard and Ross (2012) give the British flight period as June–July.

County and 10km squares: Cavan. The species is only known from one 10km square (1/1019).

Published records

O'Connor, 1978a (**CAVAN**). *O'Connor, 1987* (**CAVAN:** R. Shannon). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 1 out of 207 river sites [no details given, larval record requiring confirmation]). *O'Connor and Nelson, 2012* (**CAVAN**). *Barnard and Ross, 2012* (**IRELAND**). *Kavanagh and Harrison, 2014* (larval record requiring confirmation. After a request to see voucher material, the senior author agreed (16 December 2014) to provide the relevant samples. However, despite further requests, no material has been provided)).

Unpublished records and voucher specimens

CAVAN: R. Shannon (G9726), LT ♂ 3 August 1973, JPOC, conf. JEM (NMI).

FIGURE 276. The metadorsum of the larva of *Hydatophylax infumatus*. The arrow indicates the central anterior median sclerite (after Wiggins, 1977).

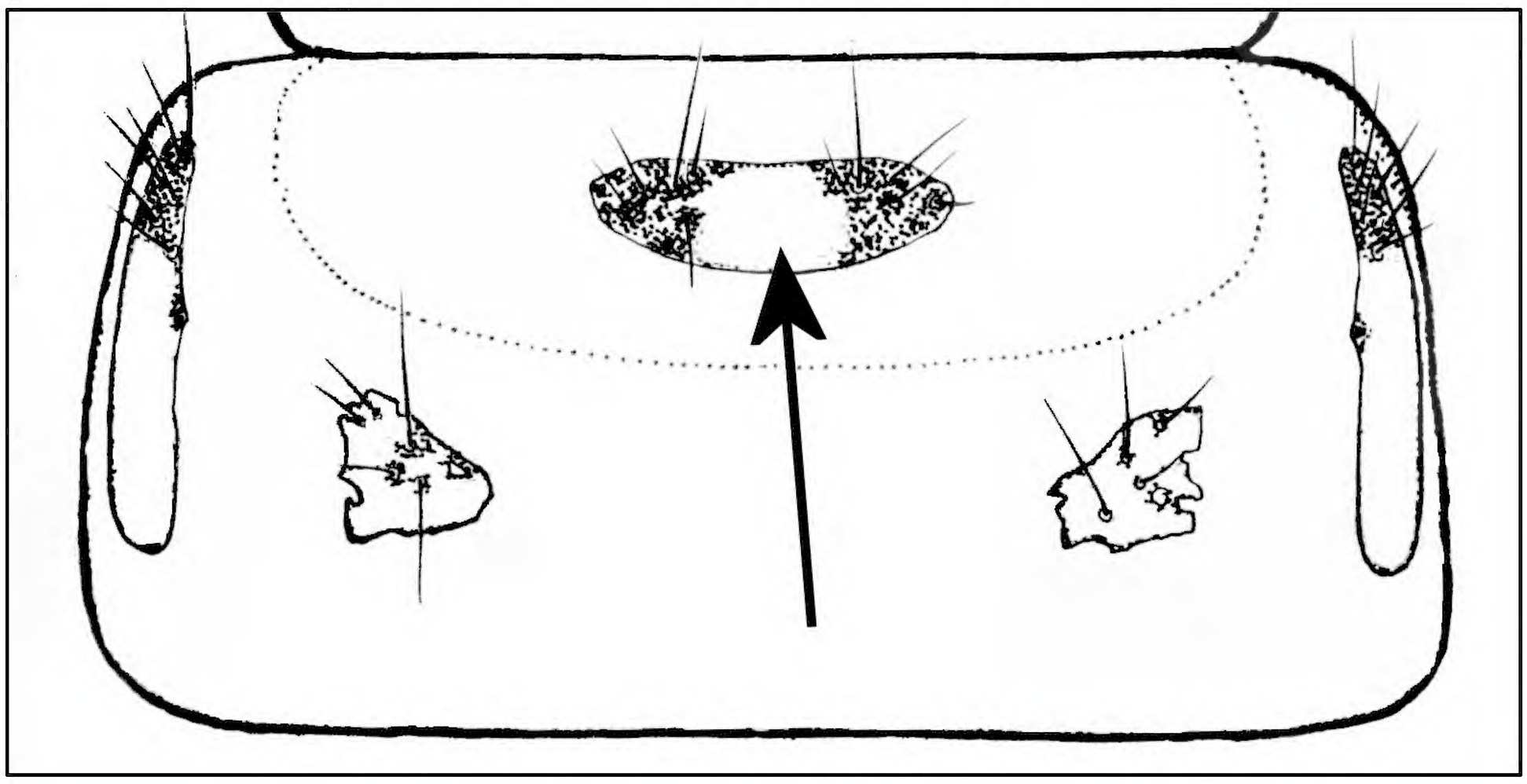
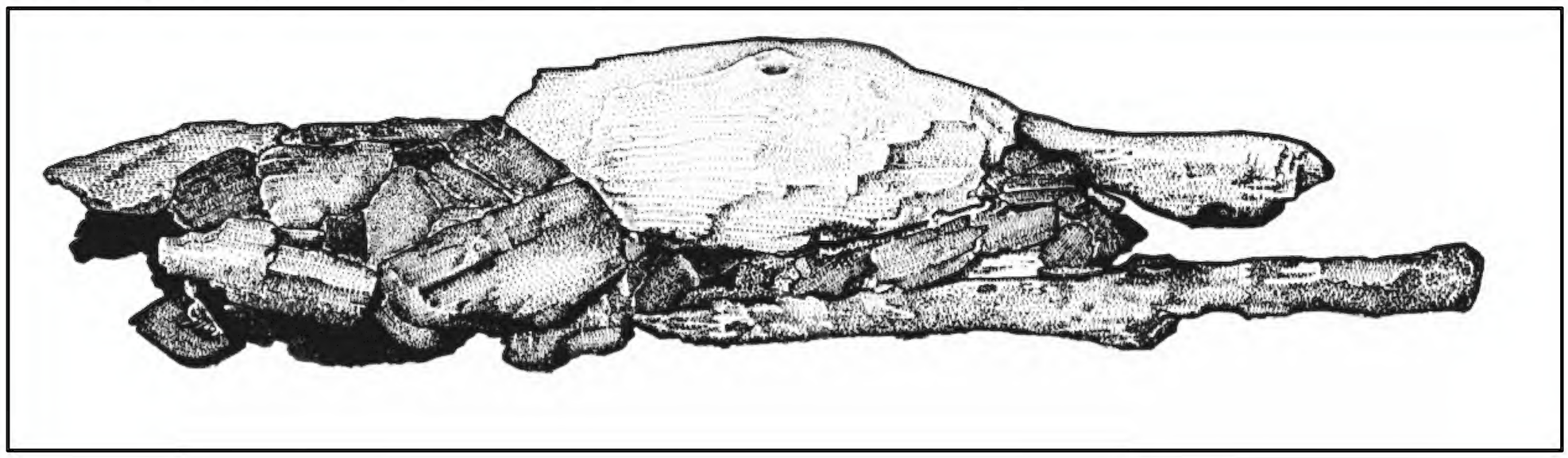
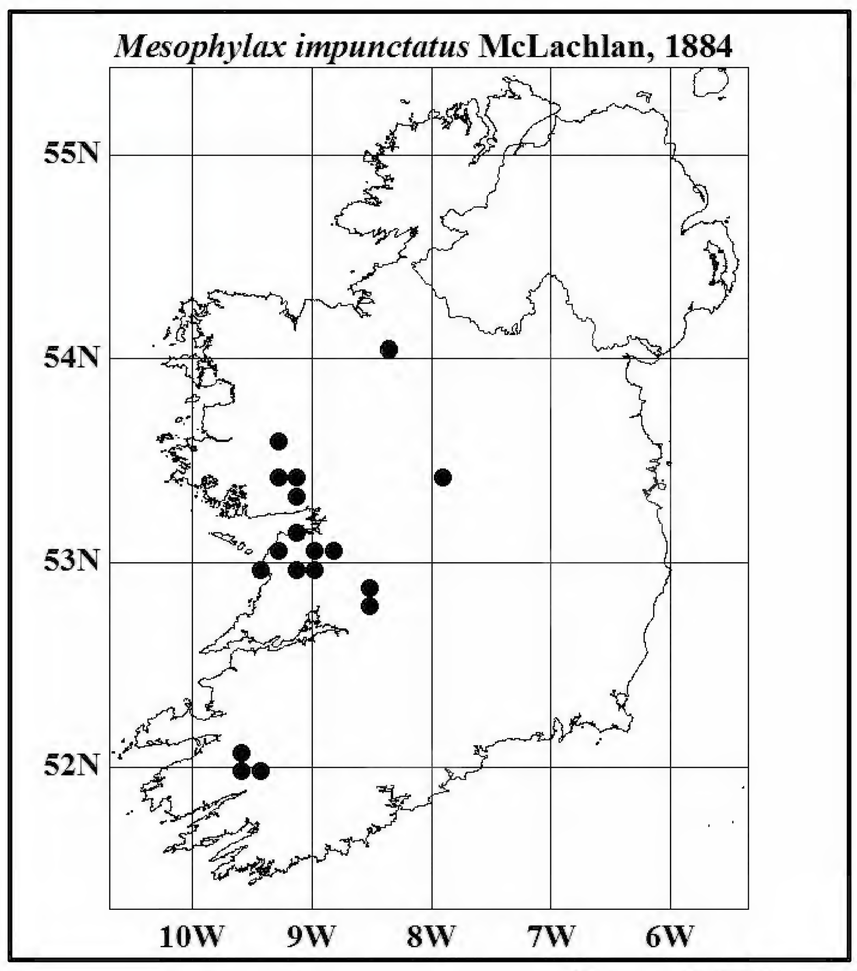


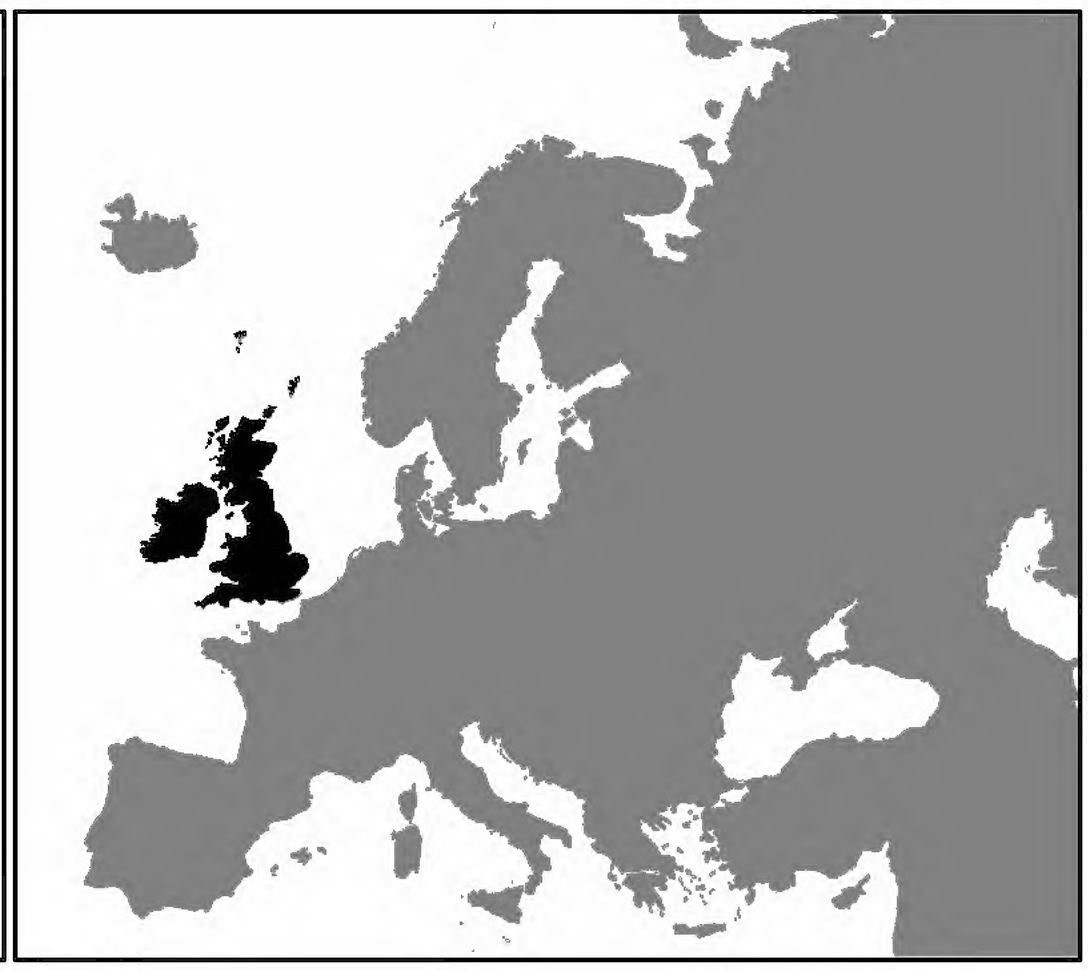
FIGURE 277. The larval case of *Hydatophylax infumatus* (after Wiggins, 1977).

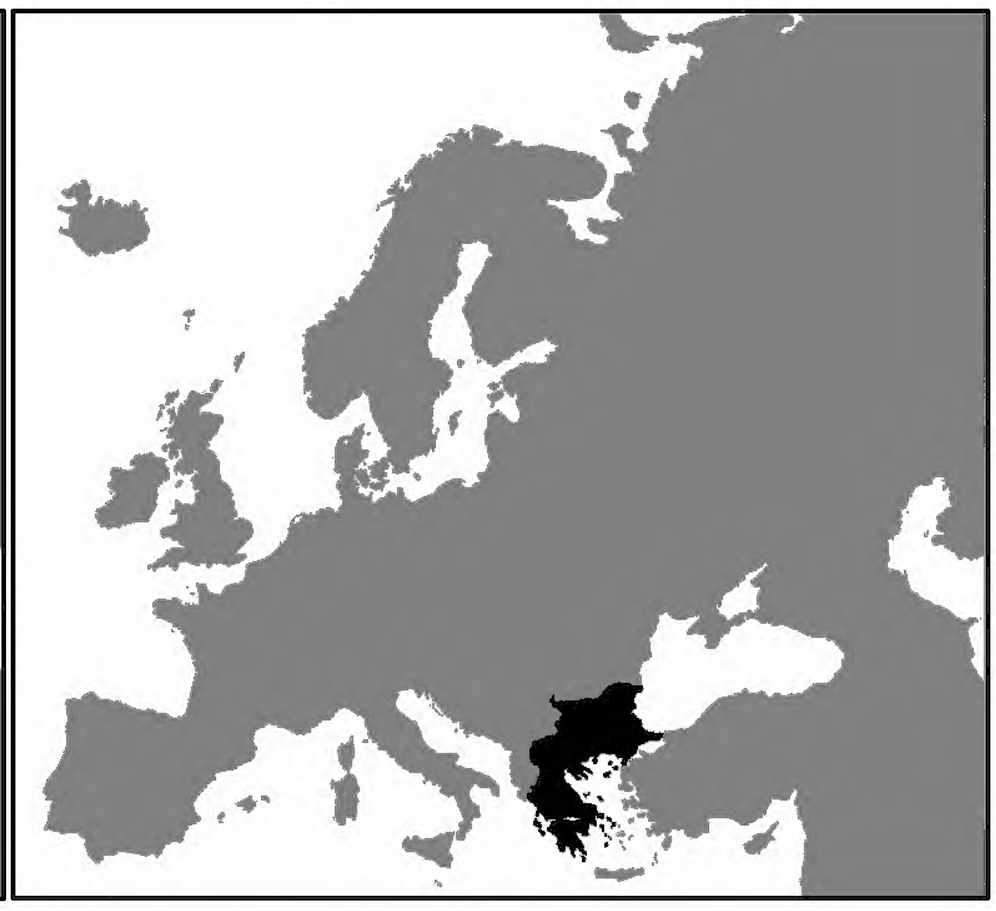


114. *Mesophylax impunctatus* McLachlan, 1884

FIGURES 278-281. Known Irish and European distributions of *Mesophylax impunctatus*.







Mesophylax impunctatus is a local Irish species mainly associated with limestone lakes and is commonest in Counties Clare and Galway. The adults can occur in large numbers in water-bodies such as Muckross Lake, Killarney, County Kerry, where the

cased larvae live under stones among *Littorella*. Larvae were also found in the River Laune where it exits Lough Leane, County Kerry. However they may have been washed into the river (O'Connor and Wise, 2004). The cases are slightly curved and composed mostly of small mineral particles. The larvae are mainly shredders. The species has a curious European distribution. Malicky (2005) gives three subspecies but only the ssp. *zetlandicus* McLachlan, 1884, occurs in Ireland. This subspecies is found in the British Isles and the Faroe Islands (Fig. 279) while *M. i. impunctatus* McLachlan, 1884, is found in central Europe (Malicky, 2014) (Fig. 280). The third subspecies *M. i. aduncus* is found in Bulgaria, continental Greece, Macedonia and surrounding areas (Fig. 281).

Flight period: May–November (17 May–25 November). There is a summer diapause.

Counties and 10km squares: Clare, Galway, Kerry, Mayo, Sligo, Westmeath (6/32). The species is known from eighteen 10km squares (18/1019).

Published records

Hiley, 1976 (**KERRY:** Loch Leare [L. Leane], larvae). *O'Connor, 1978a* (**CLARE. KERRY**). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990); Muckross Lake (V9385), (V9385); Upper Lake [Killarney]). *O'Connor, 1987* (**CLARE. KERRY**). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** south-west). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Bracken, 1998* (**KERRY:** Killarney). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** south-west). *O'Connor and Wise, 2004* (**KERRY:** R. Laune (V8991)). *Donohue et al., 2009* (**IRELAND**). *O'Connor and Nelson, 2012* (**KERRY**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**CLARE:** L. Bunny (R3796)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686); Muckross Lake (V9485), (V9685)).

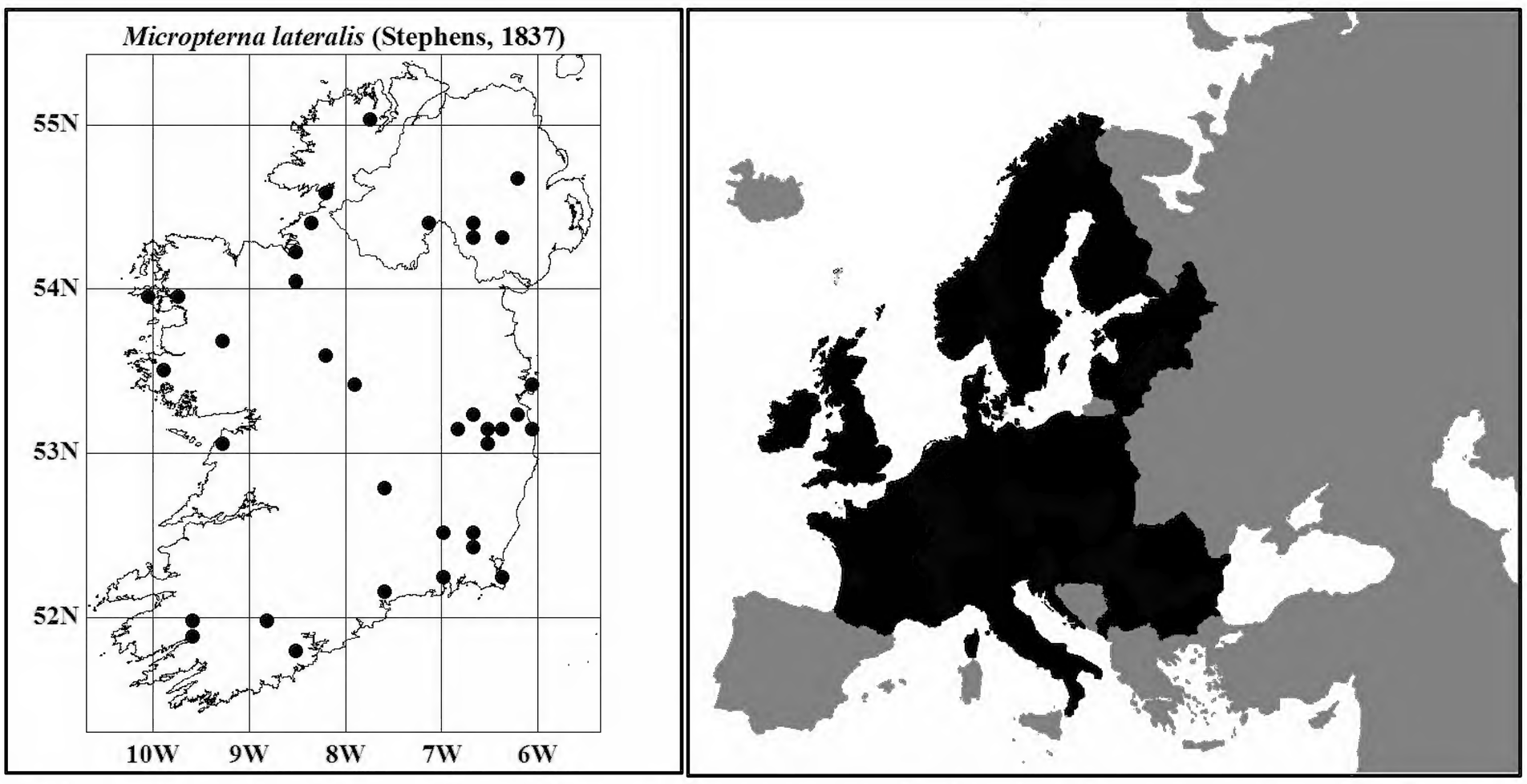
Unpublished records and voucher specimens

CLARE: Ballyeighter (R3493), ♂ 25 May 1971, ECPC (NMS); **Ballyvaughan** (M2207), ♂ 9 September 1963, ECPC (NMS); **Liscannor** (R0688), LT ♂ 10 July 1980, JPOC; **Lisdoonvarna** (M1000), ♂ 15 August 1969, ECPC (NMS); **L. Bunny** (R3796), ♂ 9 August 1969, ECPC (NMS); **L. Derg** (R7071), near Killaloe, adult 17 May 1948, C. Farran (misidentified by JRH as *Mesophylax asperus*), (R6878), LT ♂4♀♀ 2-3 September 1973, JPOC (NMI); **L. Inchiquin** (R2789), ♂ 4-6 June 1972, JPOC; **Rinnamona L.** (R2892), Burren, ♂ 1-11 September 1963, JDB, conf. JPOC (BMNH). **GALWAY: L. Corrib** (M1745), adults August-September 1964, MK, (M2531), Hurney's Point [near Moycullen], ♀ 14 September, 2♀♀ 16 September & ♀ 25 September 2003, (M2642), Keekill, LT ♂3♀♀ 2 August 2003, KGMB, det. JPOC, (M2241), Cloonmore, LT ♂ 24 May 2015, MG/CC, det. MG; **L. Cutra** (R4698), MVLT ♀ 30 August 1996, KGMB, det. JPOC (NMI). **KERRY: L. Guitane** (W0385), ♀ 10 October 1972, JPOC, (W0185), exit, west shore, pupal cases June 1974, IDW; **L. Leane**, 3 larvae in brown trout fish stomach, JPOC, det. IDW (NMI), larvae from trout stomach, JPOC (NMI); **Muckross Lake** (V9685), Dundag Bay,

submerged IET ♂ 29 May 1973, UCD, det. JPOC, Goleen, larvae under stones among *Littorella*, June 1974, IDW, (V9485), LT ♂♂♀♀ 11/12 October 1972, JPOC, conf. A. Brindle (NMI); **Torc stream** (V9684), near Muckross 2♂♂♀ 21 October 1994, JPOC; **Upper Lake, Killarney** (V9181), ♂ 6 September 1972, JPOC. **MAYO: L. Mask** (M1259), (M1465), adults August-September 1964, MK. **SLIGO: L. Arrow** (G7711), adults August-September 1964, MK. **WESTMEATH: Athlone** (N0341) [R. Shannon], adult 9 August 1888 (misidentified as *Stenophylax lateralis*), [JJFXK], det. FCJF (HMAG).

115. *Micropterna lateralis* (Stephens, 1837)

FIGURES 282-283. Known Irish and European distributions of *Micropterna lateralis*.



Micropterna lateralis is widely distributed in Ireland. The cased larvae occur in ditches, flowing marshes and small streams which normally dry out during the summer. They are mainly shredders. The case is usually composed of dead leaves although small mineral particles may be also used. The species is widespread in much of Europe.

Flight period: May–August (26/30 May–9 August). Adults were taken in Malaise traps during the period 19 May to 8 June.

Counties and 10km squares: Antrim, Armagh, Carlow, Clare, Cork, Donegal, Down, Dublin, Galway, Kerry, Kildare, Kilkenny, Mayo, Roscommon, Sligo, Tyrone, Waterford, Westmeath, Wexford, Wicklow (20/32). The species is known from thirty-six 10km squares (36/1019).

Published records

King, 1888a (**ARMAGH:** Armagh (H8745). **DUBLIN:** Howth (O3038). **KERRY:** Torc Cascade (V9684). **SLIGO:** near Sligo (G7035). **TYRONE:** Altadiawan (Altadaven) (H5949); Favour Royal (H6152) [R. Blackwater]. **WESTMEATH:** Shannon (N0341)). *King and Halbert, 1910* (**ARMAGH:** Mullinure (H8846); Scarva

(J0643) [R. Bann]. **DONEGAL:** Coolmore (G8566); near Kilmacrennan (C1420) [Leannan R.]. **DUBLIN:** Howth (O3038). **KERRY:** Torc Cascade (V9684). **KILKENNY:** Johnstown (S2867). **ROSCOMMON:** Mote Park (M8960). **SLIGO:** Keshcorran (Kesh Corran) (G7112); near Sligo (G7035). **TYRONE:** Altadiawan (Altadaven) (H5949); Favour Royal (H6152) [R. Blackwater]. **WESTMEATH:** Shannon (N0341)). *Halbert, 1912* (**MAYO:** Achill Island (F6405)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 6 out of 207 river sites). *Donohue et al., 2009* (**IRELAND**). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)).

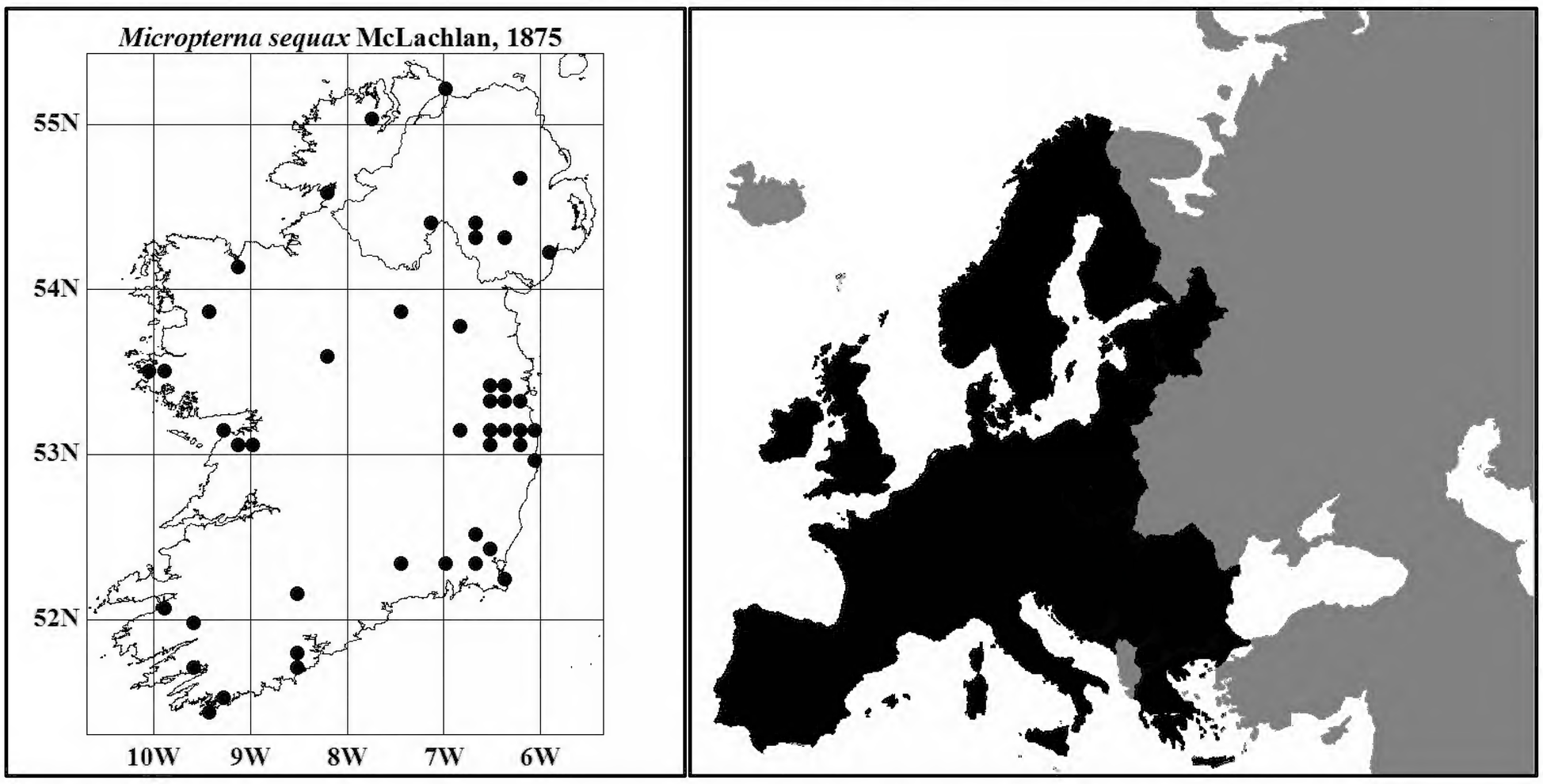
Unpublished records and voucher specimens

ANTRIM: Rea's Wood (J1485), MT ♂ 19 July 1985, MB, det. JPOC. **ARMAGH: Armagh** (H8745), ♀ 3 July 1891 (at sugar), ♂ 10 June 1892, WFJ, conf. JPOC (NMI). **CARLOW: St Mullins** (S7238), stream, larva 5 July 2014, MAOC/JPOC, det. JPOC. **CLARE: Ballynalacken area** (M1000), Burren, adult 2-14 June 1962, JDB, det. PHW (BMNH). **CORK: Glinny, Riverstick** (W6658), seasonal streams/ponds in alder woods, MT 2♂♂5♀♀ 8-28 June 2005, MCDS, det. JPOC. **DONEGAL: Coolmore** (G8566), ♀ July 1894 (misidentified as *Stenophylax sequax*), [WFJ], det. JPOC (NMI); **Kilmacrennan** (C1420) [Leannan R.], 2♂♂ 10 July 1891, JJFXK, det. FCJF (HMAG). **DOWN: Scarva** (J0643) [R. Bann], ♂ 12 June 1896, det. KJM, conf. JPOC (NMI). **DUBLIN: Glencullen R.** (O1919), larva 27 September 1977, JPOC. **GALWAY: Connemara National Park** (L7157), acidophilous woodland, MTS 4♂♂ 19 May-8 June 1994, 2♂♂3♀♀ 30 June-20 July 1994, MCDS, det. JPOC. **KERRY: Kenmare** (V9471), ♀ 26-30 May 1961, JDB, conf. JPOC (BMNH); **Killarney**, ♂♀ 1a August 1887, [JJFXK], det. FCJF (HMAG). **KILDARE: Grand Canal** (N9225), Devonshire Bridge, MVLT ♀ 28 July 1977, MDCW, det. JPOC; **Newbridge (Pollardstown) Fen** (N7715), MVLT near springs, canal drains and *Schoenus* fen, ♀ 22 July 1989, KGMB/JAG, det. JPOC. **MAYO: Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT ♂ 30 May-20 June 1997, MCDS, det. JPOC. **SLIGO: Clogh Valley** (G7246), in a stream below a spring, 1500ft (457m), 2 larvae 30 July 1983, JAG, det. JPOC (NMI). **TYRONE: Moy** (H8356), MT ♂ 10-16 June 1985, MB, det. JPOC. **WATERFORD: streams** (S3202), near the Vee, 5 larvae 20 July 1987, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♀ 9 August 1888, [JJFXK], det. FCJF (HMAG). **WEXFORD: angling ponds near Kellystown** (S8930), ♂ 6 July 2014, JPOC/MAOC, det. JPOC; **Duncannon** (S7308), at light ♂ 9 June 1982, JPOC; **Killoughrim Forest** (S9041), stream, ♂ 4 June 1987, JPOC, 2 larvae 3 July 2014, JPOC/MAOC, det. JPOC; **Stoneyford** (T1009) [stream], at light, 2♂♂ 6 June 1986, 2♂♂ 1 June 1994, JPOC.

WICKLOW: Kilmacanogue (O2513), marsh flowing by main stream, with litter of *Salix*, *Alnus* etc., marsh marigold, *Iris* etc. emergent, larvae (v) in flowing marsh, 11 March 1984, IDW; **King's R.** (O0001), LT 2♂♂ 22-23 July 1973, JPOC (NMI); **Lower L. Bray** (O1316), larvae 1996/1997, JW; **Russelltown Park** (N9611), stream feeding lake, upper section by old hedge of mature *Fagus* and *Quercus* in field, slow, muddy and weedy, a few larvae (v) 10 March 1984, IDW.

116. *Micropterna sequax* McLachlan, 1875

FIGURES 284-285. Known Irish and European distributions of *Micropterna sequax*.



Micropterna sequax is widely distributed in Ireland. The cased larvae occur in ditches, marshes, pools, spring-runnels and streams. These habitats often diminish or dry out in the summer months and the empty pupal cases can be found in the dried out areas. The larvae are mainly shredders. The cases are usually composed of mineral particles but sometimes fragments of dead leaves are used. Adults frequently become entangled in the webs of spiders and these can be a very useful source of specimens. The species is widespread in Europe.

Flight period: May–November (8 May–9 November). Barnard and Ross (2012) give the British flight period as (May) June–October, possibly with a summer diapause.

Counties and 10km squares: Antrim, Armagh, Cavan, Clare, Cork, Donegal, Down, Dublin, Galway, Kerry, Kildare, Mayo, Meath, Roscommon, Tyrone, Waterford, Wexford, Wicklow (18/32). The species is known from forty-six 10km squares (46/1019).

Published records

King, 1888a (**TYRONE:** Favour Royal (H6152) [R. Blackwater]). *King and Halbert, 1910* (**ARMAGH. DONEGAL:** Coolmore (G8566). **DUBLIN:** R. Dodder between Templeogue and Tallaght (O1027). **TYRONE:** Favour Royal (H6152) [R. Blackwater]). *Beirne, 1939* (**DUBLIN:** Seapoint (O2229)). *Beirne, 1941* (**DUBLIN:**

Seapoint (O2229)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980b* as *Stenophylax* (**DUBLIN:** R. Tolka (O0640), Mulhuddart Bridge). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 9 out of 207 river sites). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Anon., 2015a* (**CLARE:** Burren National Park (R3497). **DUBLIN:** Liffey Valley Park, Waterstown (O0835)).

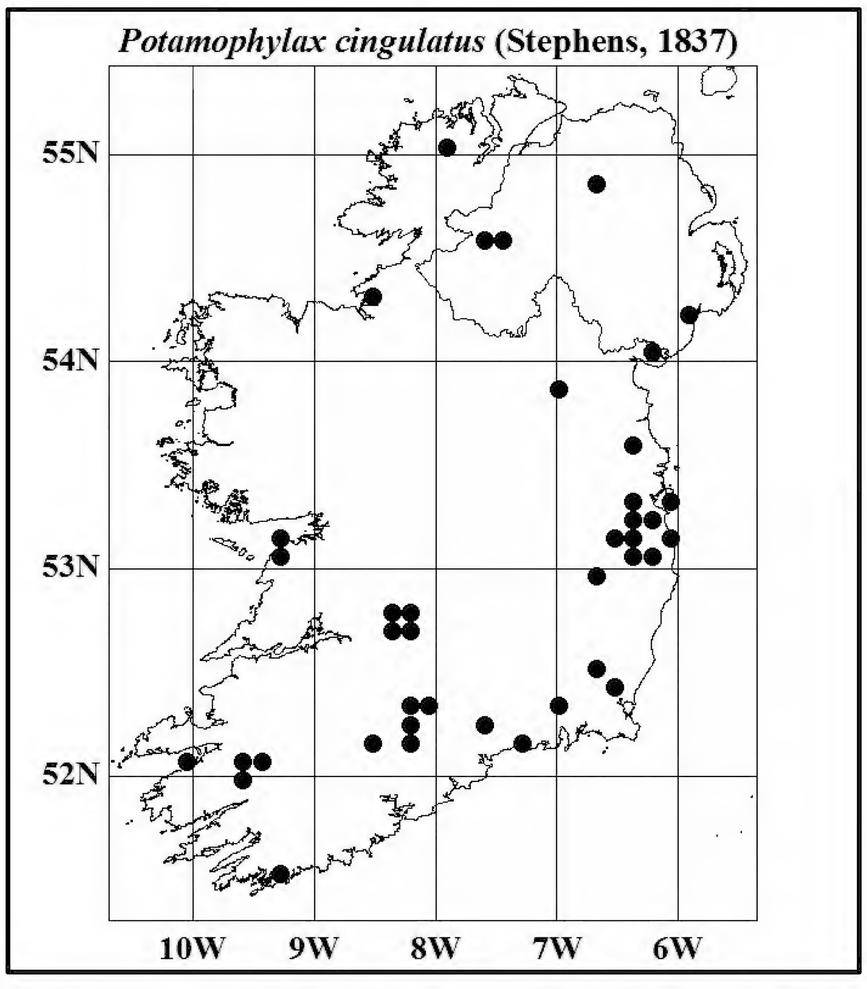
Unpublished records and voucher specimens

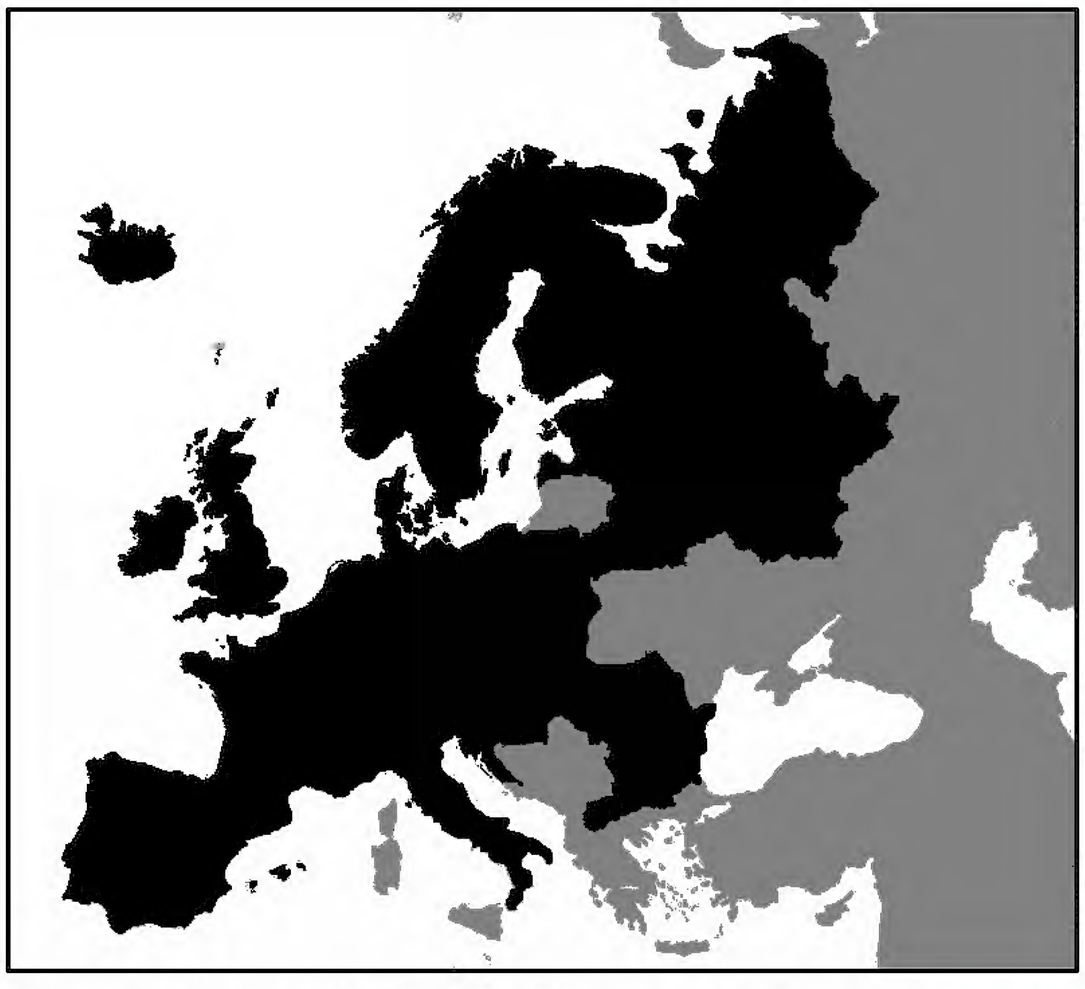
ANTRIM: Rea's Wood (J1485), MT ♀ 19 July 1985, MB, det. JPOC. **ARMAGH: Armagh** (H8745), ♂ 25 July 1889 (misidentified as *Stenophylax concentricus*), ♀ 3 July 1891 (misidentified as *Stenophylax lateralis*) ([at] sugar), WFJ, det. JPOC (NMI); **Poyntzpass** (J0639), ♀ 6 July 1897, WFJ, det. JPOC (NMI). **CAVAN: R. Erne** (N4293), ♂ 16 June 1973, JPOC (NMI). **CLARE: Rathborney** (M2005), ♂ 8 May 1982 (NMI), reared from pupa in drying out stream, also larvae, JPOC; **R. Caher** (M1608), LT 2♂♂ 30-31 August 1973, JPOC. **CORK: Glengarriff** (V9256), ♂ 13 May 1966, ECPC, conf. JPOC (NMS); **Glinny, Riverstick** (W6658), seasonal streams/ponds in alder woods, MT ♂4♀♀ 8-28 June 2005, MCDS, det. JPOC; **Kinsale** (W6351), water trap ♂ 23 July-10 August 1985, KGMB, conf. JPOC; **L. Ine** [Hyne] (W0829), stream, larva 27 January 1983, MJC, det. JPOC; **Rahan** (W6398), marshy area near small river, light 3♂♂ June-September 1988, PS, det. JPOC; **Sherkin Island** (W0024), Trabawn, marsh, UVLT ♂ 16 June 1983, SB, det. JPOC. **DONEGAL: Carrowtrasna** (C6742), ♂ September 1981, DJOS, det. JPOC; **Coolmore** (G8566), ♂ 9 November 1893 (misidentified as *Stenophylax lateralis*), [WFJ], det. JPOC (NMI); **Kilmacrenan** (C1420), 2♂♂ 10 July 1891 (misidentified as *Stenophylax lateralis*), [JJFXK], det. FCJF (HMAG). **DOWN: Tollymore National Park** (J3532), stream, ♂ 22 June 2014, JPOC (NMI), (J3432), dead in spider's webs on outside of wooden hut, 2♂♂♀ 22 June 2014, JPOC/MAOC, det. JPOC, (J3432), stream, ♂ 22 June 2014, JPOC. **DUBLIN: Seapoint** (O2229), ♂ 17 June & ♂ 25 August 1938, BPB, conf. JPOC (BMNH); **Strawberry Beds** (O0735), tufa stream, lower region by R. Liffey, flat, larvae (v) 12 March 1984, IDW. **GALWAY: Connemara National Park** (L7157), acidophilous woodland, MTS ♂3♀♀ 19 May-8 June 1994, 2♂♂2♀♀ 30 June-20 July 1994, MCDS, det. JPOC; **Rosleague Manor** (L6857), in a hedgerow, ♀♀ 22 July 1982, JPOC (NMI). **KERRY: Killarney** [Torc Falls (V9684)], ♂♀ 1a August 1887 (misidentified as *Stenophylax lateralis*), [JJFXK], det. FCJF (HMAG); **L. Caragh** (V7392), small stream, ♂ 5 July 1973, JPOC; **R. Caragh** (V7192), below L. Caragh, ♀ 1975, MFOG, det. JPOC (NMI). **KILDARE: Louisa Bridge** (N9936), larvae (v) flat shallow area of stream with *Chara* and larva (v) temporary margin of permanent oozing marsh under scrub, 12 March 1984, IDW; **Newbridge (Pollardstown) Fen** (N7715), ♀ 22 July 1989, KGMB/JAG, det. JPOC (NMI). **MAYO: Cornagushlaun** (M0587), Castlebar, September, MK; **R. Moy**

(G2418), Ballina, 2♂♂6♀♀ 4 August 1985, JPOC. **MEATH: R. Blackwater** (N7377), west of Kells, ♀ 1 August 1986, CM/OSF (SINMNH); **R. Tolka** (O0042), Dunboyne, ♀ 24-25 July 1981, TC, det. JPOC (NMI). **ROSCOMMON: Mote Park** (M8960), ♀ (misidentified as *Stenophylax lateralis*), det. JPOC (NMI). **TYRONE: Moy** (H8356), MTs ♂♀ 26 May-14 July, 2♂♂ 20-26 May, 2♂♂ 10-16 June & ♂ 17-23 June 1985, MB, det. JPOC (NMI). **WATERFORD: Carrick on Suir** (S3621), streams near, ♀ 12 July 1989, JPOC. **WEXFORD: ditch** (S9019), ♂, TC, det. JPOC; **J. F. Kennedy Park** (S7219), streams, ♀ 7 July 2014, JPOC; **Killoughrim Forest** (S9041), stream, ♀ 3 July 2014, JPOC/MAOC, det. JPOC; **Oaklands Wood** (S7125), ♂ 29 May 1987, JPOC; **R. Boro** (S9636), stream entering river at Soldiers Hole, ♂ 23 July 2015, JPOC/MAOC, det. JPOC; **Stoneyford** (T1009) [stream], at light, ♂♀ 6 June & 2♂♂ 8 June 1986, ♂ 1 June 1994, JPOC. **WICKLOW: Glen of the Downs** (O2611), larvae (v) system of spring runnels, lots of beech and oak litter and larva (v) shallow spring stream, 11 March 1984, IDW; **King's R.** (O0401), LT ♂ 22-23 July 1973, JPOC; **Knocksink Woods** (O2117), MT by flush beside woodland, ♂ 23-26 June 1995, 2♂♂ 26-30 June 1995, 2♂♂ 30 June-3 July 1995, ♀ 3-6 July 1995, CR, det. JPOC; **Lower L. Bray** (O1316), LT ♂ 21-22 July 1973, JPOC; **Russelltown Park** (N9611), larvae common, stream feeding lake, middle section parallel to road, 10 March 1984, IDW; **Three Mile Water** (T2989), LT ♂ 20-21 July 1973, JPOC; **Vartry Reservoir** (O1903), larva (v) side ditch and larva (v) in *Phragmites* fen, 11 March 1984, IDW.

117. *Potamophylax cingulatus* (Stephens, 1837)

FIGURES 286-287. Known Irish and European distributions of *Potamophylax cingulatus*.





Potamophylax cingulatus is widely distributed in Ireland. The cased larvae usually occur in rivers and streams but have also been found on a rocky shore in Lough Dan, County Wicklow and in some upland peatland lakes. They often form aggregations

under certain stones. The larvae are mainly shredders but can be opportunistic predators in later instars (Solem, 1985a). Their cases are usually composed of mineral particles. However *Glyphotaelius* type cases were recorded in the Glen of the Downs, County Wicklow. In the Glenfinnish River, County Cork, there was delayed egg hatching and the appearance of first instars over several months. The species was clearly univoltine with distinct year classes (Giller, O'Connor and Kelly-Quinn, 1998; Sangpradub, Giller and O'Connor, 1999). Malicky (2005) gives six subspecies but only ssp. *cingulatus* occurs in Ireland. The species is widespread in Europe.

Flight period: (April) July–October (12 July–20 October). An adult has been taken on 21 April.

Counties and 10km squares: Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Kerry, Louth, Meath, Sligo, Tipperary, Tyrone, Waterford, Wexford, Wicklow (16/32). The species is known from forty 10km squares (40/1019).

Published records

King, 1888a as *Stenophylax latipennis* (**LOUTH:** Carlingford (J1614)). *King and Halbert, 1910* as *Stenophylax latipennis* (**LOUTH:** Carlingford (J1614)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**WICKLOW:** L. Dan (O1502), adults). *Wallace, 1980* (**KERRY and other counties**). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Giller and Sangpradub, 1993* (**CORK:** Glenfinnish R.). *Sangpradub and Giller, 1994* (**CORK:** Glenfinnish R.). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706)). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 93 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Anon., 2008* (**MEATH:** Delvin R. (O0561)). *McKie et al., 2008* (**IRELAND**). *Donohue et al., 2009* (**IRELAND**). *Gammell, 2011* (**WEXFORD:** Artramon Stream, Edenvale (T0427); R. Sow, Edenvale (T0427)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** R. Behy (V6589)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *O'Connor, Bond and O'Connor, 2014* (**DOWN:** Tollymore National Park, R. Shimna (J3432) and a stream (J3532)). *Baars et al., 2014* (**IRELAND:** recorded in 2 of 12 upland peatland lakes). *Anon., 2015a* (**DUBLIN:** Howth Head (O2637); Liffey Valley Park, Waterstown (O0835)). *O'Connor, Bond and O'Connor, 2015* (**DERRY:** Grillagh R. near Maghera (C8303). **TYRONE:** Aghadulla (H3767); Sloughan Glen

(H2774)).

Unpublished records and voucher specimens

CAVAN: Barora R. (N6894), branch of, ♂ 31 August 1972, JPOC (NMI). **CLARE: Aille R.** (R1397), Lisdoonvarna, ♂ 21 April 1982, JPOC/MAOC; **R. Caher** (M1608), LT ♂♂ 30-31 August 1973, JPOC. **CORK: L. Ine** [Hyne] (W0829), inlet stream, larvae 27 January 1983, MJC, det. JPOC; **Rahan** (W6398), marshy area near small river, light 3♂♂ June-September 1988, PS, det. JPOC; **R. Araglin** (R8703), larvae 1988-1990, NS. **DONEGAL: Glenveagh National Park** (C0423), RLT ♀ 6 August 1982, COK, det. JPOC (NMI), LT ♂ 26 August 1982, DD, det. JPOC (NMI). **DOWN: Tollymore National Park** (J3432), R. Shimna, larva 22 June 2014, MAOC, det. JPOC (NMI), (J3532), stream, 20 larvae 22 June 2014, MAOC/JPOC, det. JPOC (NMI). **DUBLIN: Owendoher R.** (O1324), larva 27 September 1977, JPOC. **KERRY: Cloghereen** (V9787), stream, larvae/pupae June 1974, IDW; **Killarney**, adult 20 October 1946, JRH (as *Stenophylax latipennis*); **O'Sullivan's Cascade** (V9188), 3 larvae 17 April 1973, JPOC; **R. Laune** (V8892), larvae April 1972, EJW (NMI); **Torc stream** (V9684), near mouth, larvae June 1974, IDW. **LOUTH: Carlingford** (J1614), ♂ (as *Stenophylax latipennis*), WFJ, conf. JPOC (NMI). **SLIGO: Rahaberna** (G6940), ♂ 22 August 1988, DCFC, det. JPOC. **TYRONE: Aghadulla** (H3767), Skinner trap 3♂♂ 2 September 2014, KGMB, det. JPOC (NMI). **WATERFORD: Fennor** (S5201), at light in window, ♂ 12 July 1987, JPOC; **Mahon Falls** (S3108), top of stream in bog near the Falls, larvae 25 May 1997, JPOC, stream in moorland, larva 25 July 2015, JPOC/MAOC, det. JPOC. **WEXFORD: J. F. Kennedy Park** (S7218), streams, 4 prepupal larvae 14 July 1987, JPOC, (S7219), 6 larvae & 2♂♂ pupae 7 July 2014, MAOC/HOC, det. JPOC; **Oaklands Wood** (S7125), stream, larva 29 June 2014, JPOC/MAOC, det. JPOC; **R. Urrin** (S8943), bridge near Mangan, ♀ pupa with larval sclerites 3 July 2014, JPOC/MAOC, det. JPOC. **WICKLOW: Glen of the Downs** (O2611), system of spring runnels, lots of beech and oak litter, larvae (v) in *Glyphotaelius* type cases and shallow spring stream, larvae (v), 11 March 1984, IDW; **L. Dan** (O1502), larva sheltered rocky shore, 27 April 1973 & 5♂♂ pupae, stream entering exit river, 16 August 1972, stream below, 20 larvae 18 June 1974, (O1404), stream above, 10 larvae 18 June 1974, JPOC; **Lower L. Bray** (O1316), ♂ 18 August & LT 21-22 July 1973, (O1416), stream exiting, ♂ 18 August 1973, JPOC; **near Lackan** (O0110), stream, larvae (v), 10 March 1984, IDW; **R. Liffey** (O0414), Ballysmuttan, overflow through gravel bank, larvae (v), 10 March 1984, IDW; **Russelltown Park** (N9611), stream feeding lake, middle section, larvae (iv, v), 10 March 1984, IDW; **stream** (S8695), ♂ 20 September 1973, JPOC.

118. *Potamophylax latipennis* (Curtis, 1834)

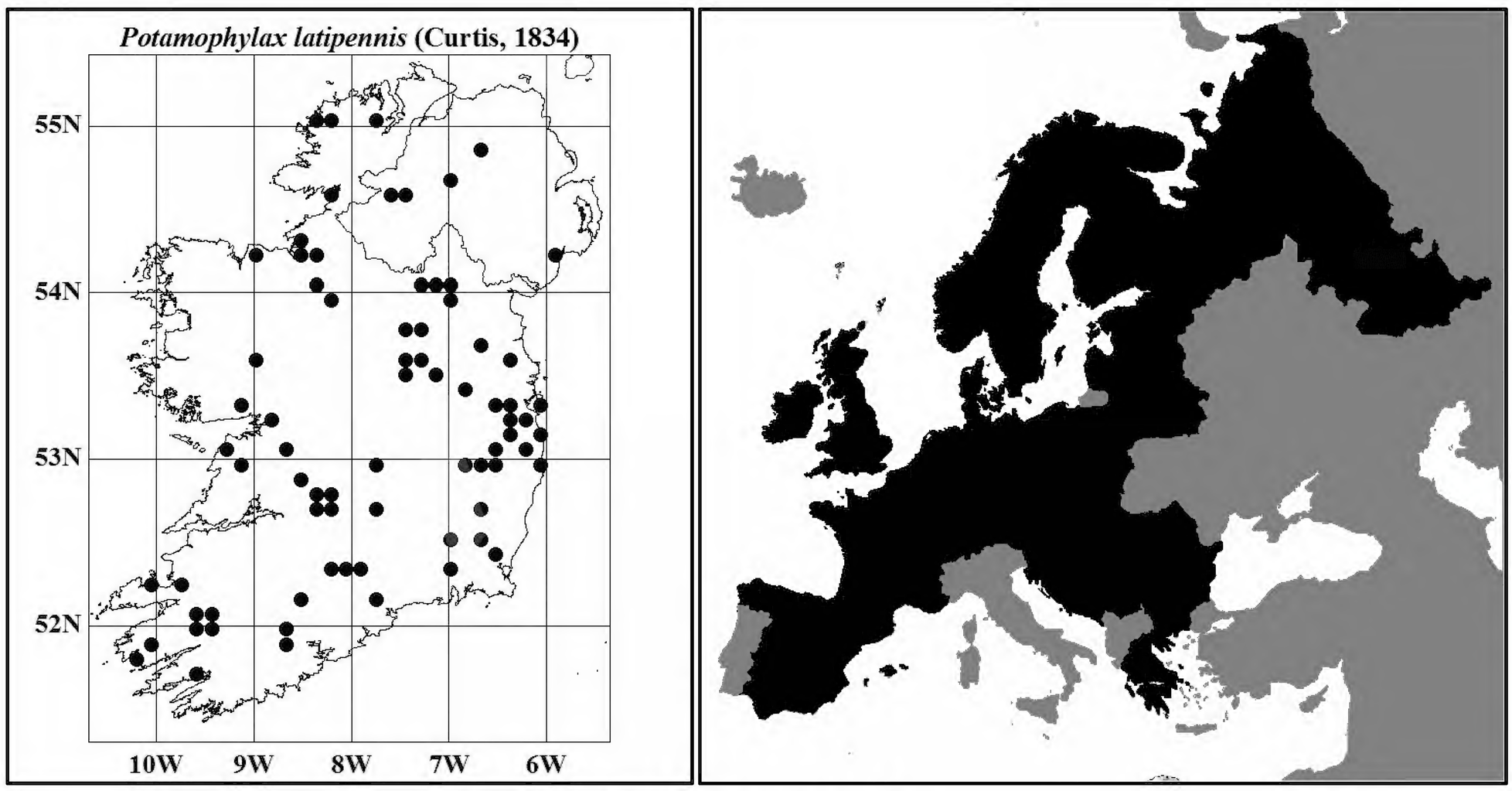
Potamophylax latipennis is widely distributed in Ireland. The cased larvae occur in lakes, rivers and streams. The larvae are mainly shredders but can be opportunistic

predators in later instars (Solem, 1985a). Their cases are usually composed of mineral particles. However *Glyphotaelius* type cases were recorded in the Glen of the Downs, County Wicklow. The species is widespread in Europe.

Flight period: April–October (21 April–13 October).

Counties and 10km squares: Carlow, Cavan, Clare, Cork, Derry, Donegal, Dublin, Galway, Kerry, Kildare, Mayo, Meath, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (21/32). The species is known from seventy-five 10km squares (75/1019).

FIGURES 288-289. Known Irish and European distributions of *Potamophylax latipennis*.



Published records

King, 1888a as *Stenophylax stellatus* (**DUBLIN:** Lucan (O0335) [R. Liffey]. **KERRY:** Cloghereen (V9787); The Glen in Deer Park (V9792). **SLIGO:** near Sligo (G7035)). *Halbert, 1908 as Stenophylax stellatus* (**DUBLIN:** Lucan (O0335)). *King and Halbert, 1910* as *Stenophylax stellatus* (**DONEGAL:** Coolmore (G8566); Dunleury [Dunlewey] (B9119); Gweedore (B8221); L. Keel (C1524). **DUBLIN:** Lucan (O0335) [R. Liffey]. **KERRY:** Cloghereen (V9787); The Glen in Deer Park (V9792). **SLIGO:** near Sligo (G7035). **TIPPERARY:** Cahir (S0424)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan [H7007], adults. **WICKLOW:** L. Dan (O1502), adults). *Wallace, 1980* (**KERRY and other counties**). *O'Connor, 1982* (**KERRY:** Dingle Peninsula, R. Curraheen (Q7811)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake)). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 33 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Gammell, 2011* (**WEXFORD:** Artramon Stream,

Edenvale (T0427)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Curraheen R. (Q7811); Doolough (V9585); L. Currane (V5065); Muckross Lake (V9685); R. Flesk (V9789)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Anon., 2015a* (**CLARE:** Burren National Park (R3497). **DUBLIN:** Liffey Valley Park, Waterstown (O0835). **KERRY:** Killarney National Park (V9490)). *O'Connor, Bond and O'Connor, 2015* (**DERRY:** Grillagh R. near Maghera (C8303). **TYRONE:** Ballinderry R. (H6980)).

Unpublished records and voucher specimens

CARLOW: R. Slaney (S9161), Clonegal, adult 31 August 1946, JRH (as *Stenophylax stellatus*); **St Mullins** (S7238), stream, larva 5 July 2014, MAOC/JPOC, det. JPOC. **CAVAN: L. Sheelin**, adults 30 August 1945 & 10 August 1947, JRH (as *Stenophylax stellatus*), (N4182), LT 2♂♂ 25-26 September 1973, JPOC, (N4384), Kilnahard Bay, IETS 1973/1974 ♂, PG, conf. JPOC, (N4183), Kelly's Bay, 2 larvae 7 May 1975, KFW, det. JPOC, (N4784), river at Crover, ♀ 12 September 1991, JPOC (NMI); **L. Sillan** (H7007), ♂ reared 28 August 1972 from larva (NMI), 12♂♂ August 1971, light 15♂♂13♀♀ 31 August & ♂♂♀♀ 30 August 1972, (H6906), 2♂♂ 30 August 1972, larva exposed shore & 6 larvae sheltered rocky shore, 26 March 1973, JPOC; **R. Annalee** (H4511), LT ♂ 27-28 September 1973, (H6810), 2♂♂♀ 1 September & ♂ 30 September 1972, JPOC; **R. Inny** (N4081), at Finnea, LT 4♂♂ 30-31 September 1973, JPOC; **R. Laragh** (H5210), LT 2♂♂3♀♀ 2-3 August 1973, JPOC. **CLARE: Aille R.** (R1397), Lisdoonvarna Spa, ♂ 21 April 1982, JPOC; **Bleach R.** (R6096), LT ♂♂♀♀ 3-4 September 1973, JPOC; **L. Derg** (R6979), LT ♂♀♀ 2-3 September 1973, JPOC; **R. Fergus** (R2888), Corofin, adult 18 September 1945, JRH (as *Stenophylax stellatus*). **CORK: Ballyhooley** (R7000) [R. Blackwater], ♂ 24 August 1980, KGMB, det. JPOC (NMI); **Glengarriff** (V9256), adult July 1947, BPB, det. JRH (as *Stenophylax stellatus*); **Rahan** (W6398), marshy area near small river, light 11♂♂ June-September 1988, PS, det. JPOC; **R. Lee** (W5671), adults July-September, MK; **R. Shournagh** (W5380), larvae, MM, det., JPOC (NMI). **DERRY: Formil** (C7611), Gelvin, LT ♂ 5 September 2014, KGMB, det. JPOC. **DONEGAL: Coolmore** (G8566), ♂ 9 November 1893 (misidentified as *Stenophylax sequax*), det. JPOC (NMI); **Dunlewy** (B9119), LT ♂ 17 July 1980, JS, det. JPOC (NMI). **DUBLIN: Dublin** (O1328) [R. Dodder], ♀ 9 June 1895 (misidentified as *Stenophylax sequax*), det. JPOC (NMI); **Marlay Park** (O1526), ♂ reared 2 June 1987, MK, det. JPOC; **R. Dodder** (O1429), Rathfarnham, adult 20 August 1947, JRH (as *Stenophylax stellatus*); **R. Griffeen** (O0333), Lucan, adult 18 August 1948, JRH (as *Stenophylax stellatus*). **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva 26 May 1984, PB, det. JPOC; **L. Corrib** (M2531), Hurney's Point [near Moycullen], LT ♂ 24 September 2003, KGMB, det. JPOC. **KERRY: Cummeragh R.** (V5872), 5 larvae 6

July & 2♂♂♀ 26 August 1973; **Killarney**, ♂ 8 August 1887, [JJFXK] (NMS); **L. Slat** (Q6008) [corrected], Stadbally, adult, EGH, det. JRAG (BMAG) (per IDW); **Muckross Lake** (V9684), Torc stream near shore, ♂ 24 August 1973, JPOC, (V9685), Goleen, larvae, June 1974, IDW; **R. Curraheen** (Q7811), LT ♂♂♀♀ 7-8 July 1973, JPOC (NMI); **R. Flesk** (W0185), near L. Guitane, 2♂♂ 10 October 1972, JPOC; **Torc stream** (V9684), 2♂♂ 26 August 1973, JPOC, near mouth, larvae June 1974, IDW. **KILDARE: R. Greese** (S7488), Kilkea, adult 6 September 1947, JRH (as *Stenophylax stellatus*). **MAYO: R. Black** (M3259), larva 10 September 1980, LW, conf. JPOC (NMI). **MEATH: L. Sheelin** (N4582), Gortport, 3♂♂♀ 22 September 1973, JPOC; **R. Blackwater** (N7739), Enfield, adult 29 July 1947, JRH (as *Stenophylax stellatus*); **R. Boyne** (N9070), Dunmoe, adult 22 August 1947, JRH (as *Stenophylax stellatus*). **OFFALY: Little Brosna** (N6050), Birr, 2♂♂ 8 September 1978, JPOC. **ROSCOMMON: L. Key** (G8205), larva 18 July 1972, AFF, det. JPOC. **SLIGO: L. Gill** (G7633), Inishfree, larva 20 July 1989, (G7331), Slish Wood, larva 20 July 1989, both JML, det. JPOC; **Rahaberna** (G6940), LT ♂ 22 August 1988, DCFC, det. JPOC; **R. Easky** (G4032), near Patch, ♂ 24 August 1992, JPOC; **stream** (G7711), L. Arrow, adults July-September 1964, MK. **TIPPERARY: Brownstown R.** (S1665), larvae 6 July 1992, DAG/JML, det. JML; **Cahir** (S0424) [R. Suir], ♂ (as *Stenophylax stellatus*), conf. JPOC (NMI), 5♂♂♀ 3 August 1986, CM/OSF (SINMNH); **Monahincha Bog** (S1789), MVLT ♂ 18 June 1986, KGMB, det. JPOC (NMI). **TYRONE: Ballinderry R.** (H6980), Dunnamore Walk, LT 2♂♂ 20 September 2014, JPOC/MAOC, det. JPOC (NMI). **WATERFORD: Colligan R.** (S2205), ♂ 15 August 2000, JPOC. **WESTMEATH: L. Ennell** (N4149), adult 28 September 1946, JRH (as *Stenophylax stellatus*), (N3847), larva sheltered rocky shore, 15 May 1973, JPOC; **L. Owel** (N3859), near Wattstown, IET ♂ 10 September 1974, PG, conf. JPOC, (N4156), larvae 1996/1997, JW; **stream** (N4663), L. Derravaragh, adults July-September 1964, MK. **WEXFORD: Killoughrim Forest** (S9041), stream, LTS ♂ 28 July 2015, JPOC/MAOC, det. JPOC (NMI); **Oaklands Wood** (S7125), ♂ 29 May 1987, JPOC, 3 larvae 29 June 2014, JPOC/MAOC, det. JPOC; **pond** (S7320), near Aclare [Aughclare], ♂ 14 June 1990, JPOC. **WICKLOW: Glen of the Downs** (O2611), system of spring runnels, lots of beech and oak litter, larvae (v) in *Glyphotaelius* type cases, 11 March 1984, IDW; **Glencullen R.** (O1919), LT ♂ 18-19 August 1973, JPOC; **King's R.** (O0401), LTS ♂ 22-23 July and ♀ 20-21 September 1973, JPOC; **L. Dan** (O1504), LTS 2♂♂ 22-23 September 1972, 19♂♂ 21-22 June 1973, JPOC; **Lower L. Bray** (O1316), larvae 1996/1997, JW; **R. Avonbeg** (T0396), Glenmalure, adult 25 July 1946, JRH (as *Stenophylax stellatus*); **R. Slaney** (S8892), LT 4♂♂2♀♀ 24-25 July 1973, JPOC; **Vartry Reservoir** (O2004), Roundwood, LT ♂ 12 July 1983, HAD, det. JPOC; **Vartry R.** (T2797), ♂ 20 July 1973, JPOC.

[*Potamophylax rotundipennis* (Brauer, 1857)

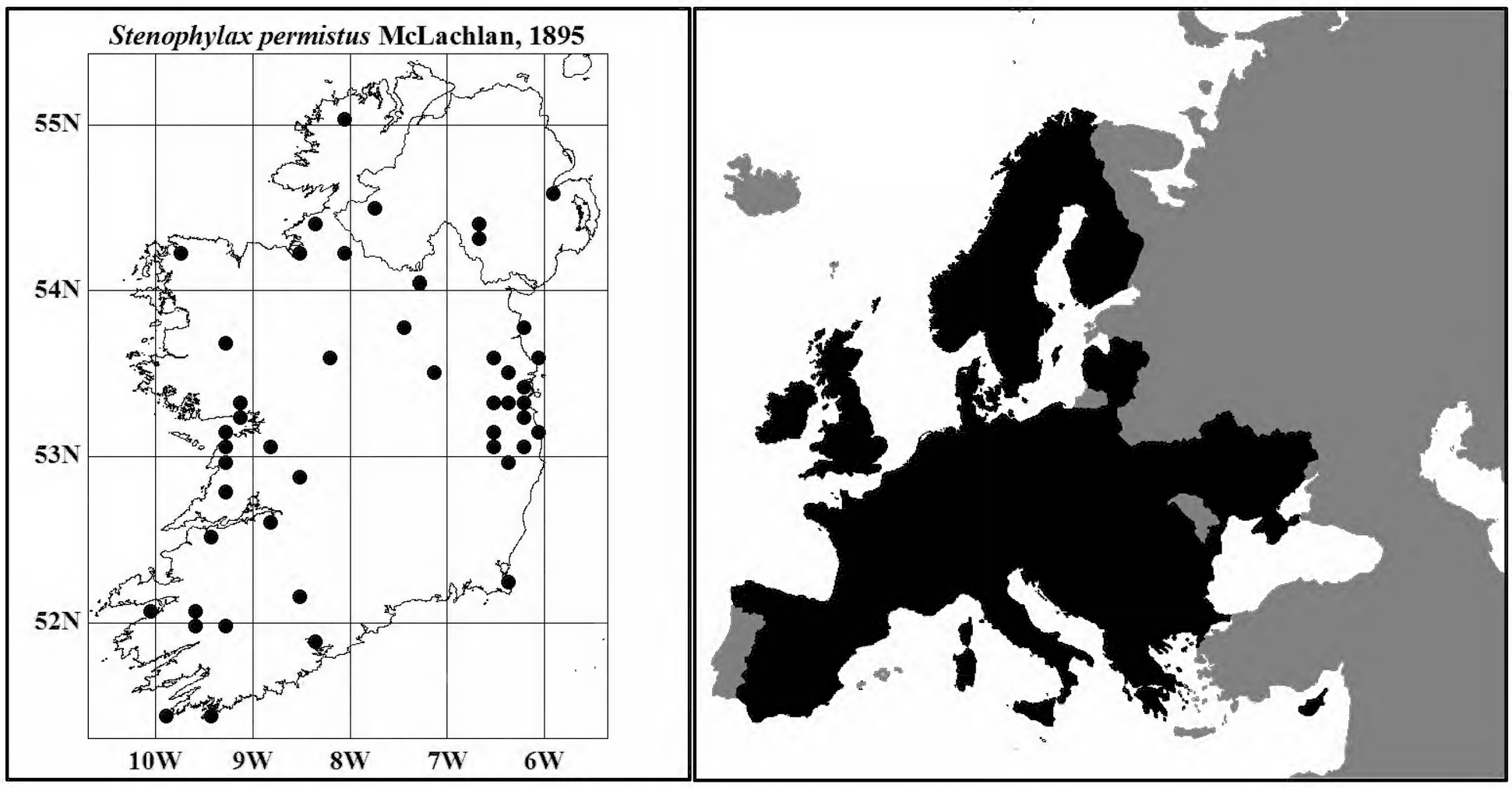
The record of *Potamophylax rotundipennis* from a lateral drainage ditch in County Cork is probably a misidentification of *Chaetopteryx villosa* which was found during the same study. After a request to see voucher material, the senior author agreed (16 December 2014) to provide the relevant samples. However, despite further requests, no material has been provided. In Britain, the habitats of *P. rotundipennis* are streams and small rivers and not ditches.

Published record

Kavanagh and Harrison, 2014 (larval identification requiring confirmation with adult or pupal material).]

119. *Stenophylax permistus* McLachlan, 1895

FIGURES 290-291. Known Irish and European distributions of *Stenophylax permistus*.



Stenophylax permistus is widely distributed in Ireland. The cased larvae are mainly shredders and occur in drainage ditches, pools, and the edges of flowing marshes. These habitats usually dry up during the summer when it can be easy to find the empty cases. The larvae build beautiful straight cases composed of butted leaf fragments. The species is widespread in Europe.

Flight period: April–October (17/23 April–27 October). Adults were taken in a Malaise trap during the period 17 to 23 April. Barnard and Ross (2012) give the British flight period as April–June, August–November. No Irish adults were taken between 26 June and 30 July. There is a summer diapause.

Counties and 10km squares: Antrim, Armagh, Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Limerick, Louth, Mayo, Meath, Roscommon, Sligo, Tyrone, Westmeath, Wexford, Wicklow (21/32). The species is known from forty-seven 10km squares (47/1019).

Published records

McLachlan, 1864 as *Stenophylax*? *concentricus* ([**KERRY**]**:** Killarney). *McLachlan, 1885* as *Stenophylax concentricus* (**ANTRIM:** Belfast (J3473)). *King, 1888a* as *Stenophylax concentricus* (**ANTRIM:** Belfast (J3473). **DUBLIN:** near Lucan (O0335) [R. Liffey]. **SLIGO:** near Sligo (G7035). **WESTMEATH:** Killucan (N5651)). *Carpenter, 1902* as *Stenophylax concentricus* ([**ANTRIM**]**:** Belfast (J3473)). *King and Halbert, 1910* (**ANTRIM:** Belfast (J3473). **ARMAGH:** Armagh (H8745). **CLARE:** Lahinch (R0987). **DUBLIN:** Portmarnock (O2342); Rathmines (O1630); Sandymount (O1832). **SLIGO:** near Sligo (G7035). **WESTMEATH:** Killucan (N5651)). *Beirne, 1939* (**DUBLIN:** Seapoint (O2229)). *Beirne, 1941* as *Stenophylax permixta* (**DUBLIN:** Seapoint (O2229)). *Fahy, 1972b* (unsafe larval identification). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 2 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers [probably washed in]). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); Muckross Lake (V9485), (V9685); R. Behy (V6589); R. Galey (R0139)). *Anon., 2015a* (**WICKLOW:** Wicklow Mountains National Park (O0101)).

Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), adult 1885, CGB, det. RMCL (BMNH). **ARMAGH: Armagh** (H8745), ♀ 20 May 1892 (as *Stenophylax concentricus*), WFJ, conf. JPOC (NMI). **CAVAN: L. Sheelin** (N4182), LT ♀ 22-23 September 1973, JPOC; **R. Annalee** (H4511), Ballyhaise, LT ♀ 27-28 September 1973, JPOC; **R. Shannon** (G9726), LT 3♂♂♀ 28-29 September 1973, JPOC (NMI). **CLARE: Lisdoonvarna** (M1000), ♀ 7 September 1963, ECPC, conf. JPOC (NMS); **L. Derg** (R6979), LT 17♂♂6♀♀ 2-3 September 1973, JPOC (NMI); **L. Doo** (R1171), ♀ 29-30 August 1973, JPOC; **R. Caher** (M1608), Burren, ♀ 15-25 May 1961, JDB (BMNH). **CORK: Ballinure** (W7270) [L. Mahon], ♀ 10 September 1985, KGMB, det. JPOC (NMI); **Mizen Head lighthouse** (V7323), ♀ 30 April 1937, DJOS, det. Mosely, conf. JPOC (BMNH); **Rahan** (W6398), marshy area near small river, light 3♀♀ June-September 1988, PS, det. JPOC; **Sherkin Island** (W0023), Slievemore, moorland, UVLT ♂ 8 August 1981, SB, det. JPOC. **DONEGAL: Glenveagh National Park** (C0019), Glenlack, LT ♀ 26 August 1982, DD, det. JPOC. **DUBLIN: Clondalkin** (O0631), MT ♂ 17-23 April 1982, JPOC (NMI); **Dublin**, adults 1861, CGB, det. RMCL (BMNH); **Kilbarrack** (O2338), ♀ 26 June 1923 (as *Stenophylax concentricus*), E. O'Mahony, conf. JPOC (NMI); **Marlay Park** (O1526), ♀ reared 2 June 1987, MK, det. JPOC; **Phoenix Park** (O1036), drainage ditch, larva March 1986, JPOC; **Rathmines** (O1630), ♀ April 1890 (as *Stenophylax concentricus*), conf. JPOC (NMI); **Sandymount** (O1832), ♀ May 1908 (as *Stenophylax concentricus*), conf. JPOC

(NMI); **Seapoint** (O2229), adults 20 October & 27 October 1938, BPB (BMNH); **Skerries** (O2560), on the beach, ♂ 14-15 June 1973, JPOC. **FERMANAGH: Lower L. Erne** (H1758), marina, Castle Archdale County Park, adult remains in spider's web on building, 1 September 2015, JPOC/MAOC, det. JPOC. **GALWAY: Barna** (M2322), ♀ 26 May 1980, DMG, det. JPOC; **L. Corrib** (M2531), Hurney's Point [near Moycullen], ♀ 14 September & 5♀♀ 16 September 2013, KGMB, det. JPOC; **L. Cutra** (R4698), MVLT ♀ 23 June 1996, KGMB, det. JPOC. **KERRY: Doolough** (V9585), LT 2♀♀ 26 August 1987, JPOC/MAOC, det. JPOC; **L. Leane** (V9291), Golf Course, ♀ 20 October 1994, JPOC; **R. Clydagh** (W1683), above Knocknagowan, LT ♂ 17 May 1978, JPOC. **KILDARE: Louisa Bridge** (N9936), temporary margin of permanent oozing marsh under scrub, larvae (v) 12 March 1984, IDW. **LIMERICK: Curraghchase Forest Park** (R4148), LT ♀ 18 May 2015, KGMB, det. JPOC. **LOUTH: Clogher** (O1684), ♀ 26 May 1967, ECPC, conf. JPOC (NMS). **MAYO: Glenamoy Bog** (F9033), IET ♂ 16 May-26 June 1972, CD, det. JPOC (NMI). **MEATH: Ashbourne** (O0459), at light ♂2♀♀ 6-8 June & ♂ 19 October 1973 (NMI), DAM, det. JPOC, (O0552), [Ward R.], ♂ 12 May 1977, MFOG, det. JPOC (NMI). **ROSCOMMON: Mote Park** (M8960), ♀ (as *Stenophylax concentricus*), conf. JPOC (NMI). **SLIGO: Clogh Valley** (G7346), at stream on *Cirsium palustre*, ♂ 30 July 1983, JAG, det. JPOC (NMI). **TYRONE: Moy** (H8356), MT 3♀♀ 20-26 May 1985, MB, det. JPOC (NMI). **WEXFORD: Stoneyford** (T1009) [stream], at light 2♂♂ 6 June & ♂ 8 June 1986, JPOC. **WICKLOW: Kilmacanogue** (O2513), larvae (v) in static side pools with iron marsh flowing by main stream, with litter of *Salix*, *Alnus* etc., marsh marigold, *Iris* etc. emergent, 11 March 1984, IDW; **King's R.** (O0001), LT ♂4♀♀ 20-21 October 1973, JPOC (NMI); **near Lackan** (O0110), flowing marsh on the verge, larva and old pupal case 10 March 1984, IDW; **R. Avonbeg** (T1487), LT 3♂♂2♀♀ 19-20 September 1973, JPOC; **Russelltown Park** (N9610), larvae (v instar) common, leaf-filled ditch by entrance (*Fagus*, some *Salix*), static now but probably flows in floods and one (v) larva stream feeding lake with lots of old pupal cases, upper section by old hedge of mature *Fagus* and *Quercus* in field, slow, muddy and weedy, 10 March 1984, IDW; **Vartry Reservoir** (O1903), ♂ 23 May 1973, JPOC (NMI).

SERICOSTOMATIDAE

[*Notidobia ciliaris* (Linnaeus, 1761)

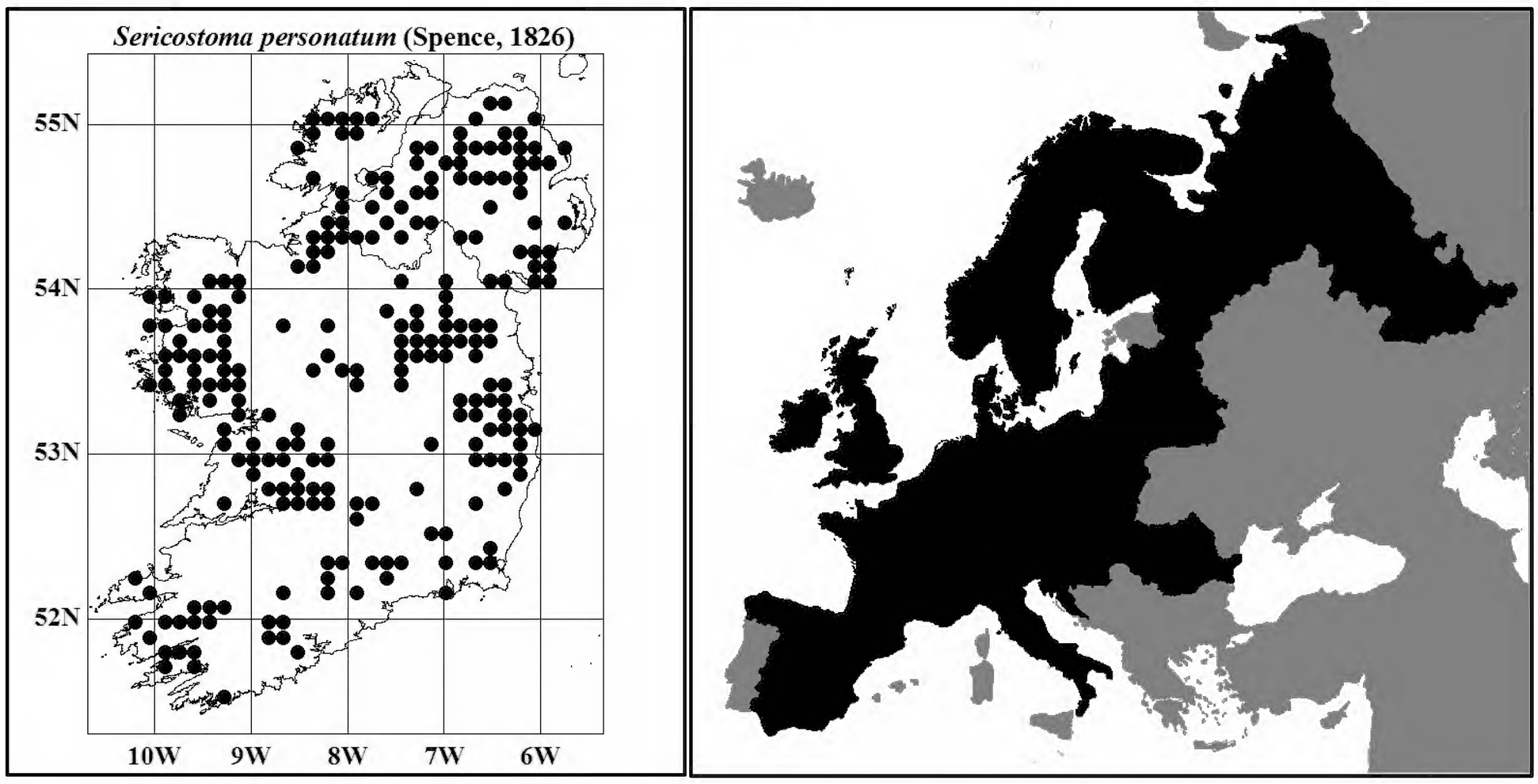
For a long time, a colour form of the larva of *Sericostoma personatum* was regarded as being *Notidobia ciliaris* (Wallace, 1991). This form could be misidentified as *N. ciliaris* using Hickin (1967).

Published records

Toner and O'Connell, 1971 (larval misidentification using Hickin (1967)). *O'Connor and Nelson, 2012* (listed as a misidentification).]

120. *Sericostoma personatum* (Spence, 1826)

FIGURES 292-293. Known Irish and European distributions of *Sericostoma personatum*.



Sericostoma personatum is a common and widely distributed Irish species. The cased larvae occur in lakes, rivers and streams. The larvae and adults can occur in large numbers and are often heavily predated by trout. The cases are curved and smooth, composed of sand grains. The larvae which feed by night, are mainly shredders. However, filamentous algae, diatoms and the remains of invertebrates have been found in their guts. In the Glenfinnish River, County Cork, the data indicated eight instars, the first of which was found from August. The final two instars were found during most of the year, suggesting that either a proportion of the population delayed further development or that all individuals spend two winters as larvae (Sangpradub, Giller and O'Connor, 1999). The species is widespread in Europe.

Flight period: (April) May–September (14 May–22 September). Adults were taken on an unspecified date in April.

Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Laois, Leitrim, Limerick, Longford, Louth, Mayo, Meath, Monaghan, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (31/32). The species is known from 239 10km squares (239/1019).

Published records

McLachlan, 1874-1884 (**IRELAND**). *Morton, 1886* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* (**KERRY:** Cloghereen (V9787); Denough [Deenagh] R. (V9792); Gap of Dunloe (V8787); Muckross (V9786); Ross Castle (V9488). **MAYO:** Carrowbeg R. (M0084); Cogaula (M0486) and Knappagh [Knappaghbeg] (M0080) Laoghs; Mount Brown [Kinlooey L.] (M0381). **MONAGHAN:** Glaslough (H7241). **WESTMEATH:** Coosan (N0446) [L. Ree];

Shannon (N0341). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *McLachlan, 1902* (**KERRY:** Parknasilla (V7164)). *King and Halbert, 1910* (**ARMAGH:** L. Neagh (Coney Island) (H9364). **DONEGAL:** Coxtown (G9271); Fern (C1824), Keel (C1524) and Sproule's (C1018) Loughs; Glenbeagh (B9918) [Owenbeagh R.]. **DUBLIN:** R. Dodder between Templeogue and Tallaght (O1027). **GALWAY:** Cong (M1455) [L. Corrib]. **KERRY:** Cloghereen (V9787); Deenagh R. (V9792); Gap of Dunloe (V8787); Muckross (V9786); Parknasilla (V7164); Ross Castle (V9488). **MAYO:** Carrowbeg R. (M0084), Cogaula (M0486) and Knappagh [Knappaghbeg] (M0080) Loughs; Mount Brown [Kinlooey L.] (M0381). **MONAGHAN:** Glaslough (H7241). **WATERFORD:** Cappoquin (X0999). **WESTMEATH:** Coosan (N0446); Shannon (N0341). **WEXFORD:** Forth Mountains (S9718). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Halbert, 1912* (**MAYO:** Achill Island (F6405); Castlebar (M1188); Louisburgh (L8080); Westport (L9984)). *Mosely, 1930* (**GALWAY:** Oughterard (M1343)). *Beirne and Harris, 1946* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Harris, 1956* (**CAVAN:** L. Sheelin). *Kennedy and Fitzmaurice, 1968a* (**CORK:** Connolly's Stream (Glashagarriff R.) (W4175)). *Toner and O'Connell, 1971* misidentified as *Notidobia ciliaris* (**CORK:** Mallow (R. Blackwater) (W5598); Mitchelstown (R. Funcheon) (R8113). **KERRY:** Rathmore (R. Blackwater) (W1694)). *Moriarty, 1972a* (**MAYO:** L. Mask (M1364)). *Fahy, 1972a* (**FERMANAGH:** (H3439) [near Maguiresbridge]. **LOUTH:** (N9882) [near Collon]. **MAYO:** (F9505). **MEATH:** (N8684) [near Siddan]. **TIPPERARY:** (S2424). **WICKLOW:** (T2390)). *Fahy, 1972b* (**MAYO:** river near Newport (F9605)). *Moriarty, 1973a* (**MAYO:** L. Mask (M1364)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1819), (O1919), (O2117), (O2217) [An * in this paper indicates adults taken and determined by JPOC]). *Wallace, 1977* (**IRELAND:** larvae examined from central and southern Ireland). *O'Connor and Norton, 1977* (**WESTMEATH:** Hare Island, L. Ree (N0446); L. Coosan (N0544)). *Speight, 1977* (**WESTMEATH:** Coosan Lake [Coosan (N0446)]). *McCarthy, 1977* (**MEATH:** Trimblestown R. (N7262)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7007), (H6907), (H7106). **WICKLOW:** L. Dan (O1504), (O1502)). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Bracken, 1980b* (**MEATH**: R. Tolka (O0241), bridge upstream of Dunboyne tributary). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480)). *Murphy and Carter, 1984* (**ANTRIM:** L. Neagh (J1181), (J0485). **DERRY:** L. Neagh (H9485), (H9586)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9191), (V9290), (V9788); Muckross Lake (V9585); Upper Lake [Killarney]). *Dauod, Bolger and Bracken, 1986* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1326), (O1327), (O1427)). *Bracken and Dauod, 1990* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Giller,*

Sangpradub and Twomey, 1991 (**CORK:** R. Araglin, Glenfinish Bridge (R8702)). *Carter and Murphy, 1993* (**IRELAND:** L. Neagh). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Kelly-Quinn, 1998* (**DUBLIN**. **WICKLOW**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Wright et al., 2000* (**NORTHERN IRELAND:** 29 out of 70 sampled sites). *Thompson, Cotton and Ryan, 2002* (**SLIGO:** L. Gill). *Kelly-Quinn et al., 2003* (**CLARE:** Caher R., near Holywell (M1706) and near Murroogh (M1508)). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Kelly et al., 2003* (**TYRONE:** R. Lissan (H8280)). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689); R. Laune (V8991), the grid reference for Station 2 should read (V8892)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 141 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1673), (M1871), (M1777)). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *Knight and Penk, 2010* (**WEXFORD:** spring (St Killian's Well) near Ballysilla Bridge (T0331)). *Atalah et al., 2010* (**IRELAND**). *Anon., 2011* (**WEXFORD:** R. Sow (T0331)). *Gammell, 2011* (**WEXFORD:** Crory Lower Stream, Edenvale (T0327); R. Sow, Edenvale (T0427)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lake (R5188), 262m. **GALWAY:** upland lake (M6701), 183m, lowland lakes (M0329), (M0229), (M0929), (M0927), (M0927)). *Little and Free, 2013* (**CLARE:** L. Cullaun (R3190), (R3290); L. Cullaunyheeda (R4774). **CORK:** Glenbeg L. (V7053). **DONEGAL:** Dunglow L. (B7811); Dunlewy L. (B9119); Gartan L. (C0515); Kiltooris Lake (G6797); L. Barra (B9312); L. Fern (C1823); L. Golagh (G9665); L. Nacung Upper (B8920); L. Veagh [Beagh] (C0121); L. Waskel (B7316); Namanfin [lake top of Corker R. near Ardara] (G7983). **GALWAY:** Ballinahinch [Ballynahinch] Lake (L7648); Cloongat [Cloonagat] L. (L6847); L. Ardderry (L9945); L. Bofin (M0344); L. Corrib (M2541); L. Fee (L7961); L. Hibbert (L8822); L. Maumeen [the grid reference of L6141 appears to be in the sea and not included]; L. Nafooey (L9759); L. Nahasleam [Aphreaghaun] (L9744); L. Rea (M6215); L. Skannive (L8032); Nambrackkeagh [lake] (L8260). **KERRY:** L. Inchiquin (V8363). **LEITRIM:** Glenade L. (G8246); Glencar L. (G7543); L. McNean [Macnean Upper] (H0239); L. Melvin (G9054). **MAYO:** Ballymore L. (G2912); Glencullin [Glenullin] L. (L8169); L. Conn (G1810); L. Cullin (G2303); L. Feeagh (F9600); L. Mask (M1060). **ROSCOMMON:** Annaghmore L. (M9083); Errit L. (M5485); L. O'Flynn (M5879). **WESTMEATH:** L. Ennell (N4146); L. Lene (N5168). **WICKLOW:** L. Tay (O1607)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686), (V9488); Muckross Lake (V9485), (V9685); R. Flesk (V9789)). *O'Connor and Hancock, 2014* (**DOWN:** R. Shimna (J3532)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Cashel Burn (D1706); Crew Burn (J1370); Doagh R. (J2693); Douglas Burn (J2299); Dunnstown Burn (D0409); Glenariff R.

(D2221); Glynn R. (J4099); Kellswater (J1698); Legnagooly Burn (D1312); R. Braid (D1003); R. Bush (C9436); R. Clady (Clady Water) (J1984), (C9603); R. Dervock (D0233); Ross Burn (J1597); Six Mile Water (J3195). **ARMAGH:** Forkhill R. (J0115); Kilnasaggart (R.) (J0615); R. Callan (H8539). **DERRY (LONDONDERRY):** Cam Burn (C8421); Miltown Burn (H8499); R. Aghadowey (C8722); R. Agivey (C7912); R. Ballinderry (H7379); R. Douglas (H7796); R. Inver (C5301); R. Mayoghill (C8819); R. Owenalena (C7406). **DOWN:** Begny Hill Feeder (J2850); Cassy Water (J2314); R. Annacloy (J4448); R. Annalong (J3719); R. Kinnahalla (J2328); R. Lagan (J2551); R. Mullagh (J3316); R. Shankys (J2225); R. Shimna (J3532); Spences R. (J3722); Upper Bann (J2129). **FERMANAGH:** Lisblake Burn (H1637); R. Ballinamallard (H2853); R. Black (H0143); R. Garvary (H0063); R. Roogagh (Glen R.) (G9451). **TYRONE:** Ballynahatty Water (R. Owenreagh) (H4367); Black Water (H2974); Dreenan Burn (H2184); Dunnyboe Burn (H4599); Fury R. (H5551); Glashagh Burn (H6180); Gortin Water (H7879); Granagh Burn (H6072); Lissan Water (H8081); Oughtmame Burn (H6293); R. Camowen (H4673); R. Cleen (H4748); R. Cloghfin (H5767); R. Derg (H1980), (H3184); R. Owenreagh (H3365); Tullynadall Burn (H4490)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *Baars et al., 2014* (**IRELAND:** recorded in 5 of 12 upland peatland lakes). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Lower L. Erne (H1758)). *Anon., 2015a* (**CLARE:** Dromore Nature Reserve (R3586); L. Bunny (R3896). **CORK:** Glengarriff Nature Reserve (V9256). **DUBLIN:** Liffey Valley Park, Waterstown (O0835). **KERRY:** Killarney National Park (V9590). **MAYO:** Clonbur Woodland (M1455). **WICKLOW:** Wicklow Mountains National Park (T1196)). *Woodward et al., 2015* (**CORK:** Glenfinish R. (R8702)).

Unpublished and voucher specimens

ARMAGH: L. Neagh (H9364), Coney Island, ♂ 24 May 1890, ♂ 30 June 1891, WFJ, conf. JPOC (NMI). **CARLOW: R. Barrow** (S7238), St Mullins, ♂ 17 June 1991, JPOC/MAOC, det. JPOC; **R. Slaney** (S9161), Clonegal, 10 larvae 31 August 1946, JRH; **St Mullins** (S7237), small river entering R. Barrow, ♂ 1 July 1991, JPOC/MAOC, det. JPOC. **CAVAN: L. Cuilcagh** (N6389), 10 larvae exposed rocky shore & 18 larvae sheltered rocky shore, 29 March 1973, 2♂♂2♀♀ 20 May 1974, JPOC; **L. Mullagh** (N6785), 17 larvae exposed rocky shore & 32 larvae sheltered rocky shore, 3 April 1973, 2♂♂ 20 May 1974, JPOC; **L. Oughter** (H3308), larva 1996/1997, JW; **L. Sheelin**, adult 30 August 1945, JRH, (N4785), Mount Nugent, 2♂♂2♀♀ 1 August 1986, CM/OSF (SINMNH), (N4686), Crover, adult 22 May, 1945, JRH, 2♂♂ 6 August 1990, (N4182), ♀ 8 July 1975, MFOG, ♂ 24 May 1973, (N4786), 12♂♂14♀♀ 5 August 1973, JPOC, (N4183), Kelly's Bay, 5 larvae & ♂

pupa 10 September 1975, KFW, (N4783), Tonagh, ♀ 30 July 2012, MG, IETS 1973/1974: (N4183), Kelly's Bay, adult, PG, (N4685), Crover, 21 adults, (N4586), near Arley Point, 40 adults, PG; **L. Sillan**, 4 larvae exposed rock shore and 4 larvae sheltered rocky shore, 26 March 1973, (H6907), ♂ May 1971, (H7106), 6 larvae 1 September 1972, (H6906), reared ♀ 19 June 1973, JPOC; **R. Barora** (N6893), LT 2♂♂ 1-2 August 1973, JPOC. **CLARE: Bleach R.** (R6096), LT ♂♀ 3-4 September 1973, JPOC; **Doonbeg R.** (R1261) [Greygrove R.], ♂2♀♀ 9 July 1973, JPOC; **Knockalough** (R1463), ♂ 8-9 July 1973, JPOC; **L. Bunny** (R3796), ♂ 28 May 1984 (NMI), 3♂♂2♀♀ 21 May 1985, JPOC/MAOC, det JPOC (NMI), ♂ 28 May 1998, JPOC; **L. Cullaun** (R3290), larvae 1996/1997, JW; **L. Derg** (R7186), Mount Shannon, LT 5♂♂ 26-27 August 2003, KGMB, det. JPOC, (R6876), north of Killaloe, ♂3♀♀ 6 August 1986, CM/OSF (SINMNH), (R6979), LT 16♂♂29♀♀ 2-3 September 1973, JPOC; **L. Inchiquin** (R2789), adult 12 June 1946, JRH, 7♂♂13♀♀ 4-6 June 1972, 3♂♂ 10 July 1973, JPOC, larvae 1996/1997, JW; **Moyree R.** (R3689), larva 11 July 1973, JPOC; **R. Caher (**M1608), Burren, adult 2-14 June 1962, JDB, det. PHW (BMNH), (M1608), ♀ 19 July 1981, LT 2♂♂2♀♀ 30-31 August 1973, JPOC; **R. Fergus** (R3480), Ennis, larva 11 July 1973, (R3489), larva 11 July 1973, JPOC; **R. Gournar** (R5166), ♂ 12 July 1973, JPOC; **R. Shannon** (R7072), Killaloe, 3♂♂2♀♀ 6 August 1986, CM/OSF (SINMNH); **stream** (R5267), ♂ 12 July 1973, JPOC; **stream** (R4086), ♂ 1 September 1973, JPOC. **CORK: Glengarriff Wood** (V9057), ♂ 7 July 1985, JPOC; **Glinny, Riverstick** (W6658), seasonal streams/ponds in alder woods, MT ♀ 8-28 June 2005, MCDS, det. JPOC; **L. Ine** [Hyne] (W0829), ♂ 12 July 1980, JMCH, det. JPOC (NMI); **R. Araglin** (R8703), larvae 1988-1990, NS; **R. Lee** (W5671), adults May-September 1964, MK; **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI). **DONEGAL: Coxtown** (G9271), ♂ July 1894, [WFJ], conf. JPOC (NMI); **Glenveagh National Park** (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT 2♂♂♀ 10-30 July 1998, MCDS, det. JPOC. **DOWN: R. Shimna** (J3532), 2♂♂ 1 July 1912, JJFXK, det. JPOC (HMAG). **DUBLIN: Castleknock** (O0837), dead on outside window sill after heavy rain, ♀ 5 August 2015, JPOC; **Dublin** (O1328) [R. Dodder], ♂ 9 June 1895, conf. JPOC (NMI); **R. Dodder**, adult 1 June 1953, R. L. Coe (BMNH), (O0926), Old Bawn, adults April 1970, larva, AFF, det. JPOC, (O1328), Templeogue, adult 15 June 1947, JRH; **R. Liffey** (O0335), Weir, Lucan, ♀ 31 July 1986, JPOC; **Royal Canal** (O0438), under Clonsilla bridge, ♂ 7 July 1977, JPOC/MAOC, det. JPOC. **FERMANAGH: Lower L. Erne** (H1658), adult 27 May 1948, Beatty, det. JRH. **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva 17 January 1984, PB, det. JPOC; **Killian R.** (M7449), Carrowmore, road bridge u/s confluence with Shiven R., 4 larvae 12 May 2012, MG; **L. Corrib** (M1745), adults May-September 1964, MK, (M1146), Upper, ♂♀ 28 May 1980, BC, conf. JPOC (NMI), (M2531), Hurney's Point [near Moycullen], MVLT ♀ 28 August 2003, KGMB, det. JPOC; **L. Mask** (M0957), Kilbeg Lower, LT ♂ 16 August 2014, MG; **L. Maumwee** [Manwee] (L9748), larvae 1996/1997, JW; **L. Nafooey** (L9560),

north-west shore, ♀ 12 July 2012, MG; **L. Rea** (M6215), larvae 1996/1997, JW; **Oughterard** (M1343), adult 3-9 August 1926, MEM (BMNH); **R. Black** (M2348), larva 10 September 1980, LW, conf. JPOC (NMI); **R. Corrib** (M2925), Nun's Island, 2♂♂ 1-7 August 1973, DMG, det. JPOC; **Roundstone** (L7140), adult, F. O'Rourke, det. JRH. **KERRY: Gap of Dunloe** (V8787), lakes, ♂ 10 July 1986, JPOC; **Killarney**, adult, E. Birchall, det. RMCL (BMNH), ♂♀ 30 June, 2♀♀ 2 July & 2♂♂ 5 July 1887, JJFXK, conf. JPOC (NMI); **Killarney Lakes**, trout stomachs 176 larvae & 2♂♂4♀♀ pupae, UCD, det. JPOC; **L. Derriana** (V6073), ♀ 6 July 1973, JPOC; **L. Doon** [L. Slat] (Q6107), ♀ 28 August 1973, JPOC; **L. Guitane** (W0385), 2♂♂♀ 3 July 1973, JPOC (NMI); **L. Leane** (V9686), 5 larvae exposed rocky shore, 10 April 1973 & 5 larvae reed bed, 13 April 1973, boat house, 6♂♂10♀♀ 28 May 1974, (V9291), Golf Course, ♂♀ 29 May 1974 (NMI), (V9488), Ross Castle, ♂ 18 May 1973, ♂♀ 13 June 1973, JPOC, Library Point (V9389), pupa July 1977, ANS, det. JPOC; **Muckross Lake** (V9685), 62 larvae sheltered rocky shore, 13 April 1973, Dundag Bay, ♂ pupa July 1972, (V9485), Colleen Baun, ♂ 28 May 1974, LT ♂ 27-28 July 1973 (NMI), (V9486), Camillan Bay, ♂ 20 June 1973, JPOC; **O'Sullivan's Cascade** (V9188), 2 larvae 13 April 1973, JPOC; **R. Cloghereen** (V9787), near hotel, ♂♀ 28 May 1995, JPOC; **R. Crinnagh** (V9481), larvae, EJW (NMI); **R. Ferta** (V5282), ♀ 6 July 1973, JPOC; **R. Glenahoo** (Q5410), ♀ 7 July 1973, JPOC; **R. Laune** (V8892), larva July 1971, EJW (NMI); **R. Owenascaul** (Q5901), ♀ 28 August 1973, JPOC; **Upper Lake, Killarney** (V9181), 17 larvae exposed rocky shore and 8 larvae sheltered rocky shore, 13 April 1973, (V9383), Long Range, 2♂♂6♀♀ 29 May 1974, JPOC. **KILDARE: canal** (N7617), at Milltown, 12♂♂8♀♀ 3 August 1986, CM/OSF (SINMNH), JPOC; **R. Blackwater** (N8132), Donadea, adult 2 August 1947, JRH; **R. Liffey** (N8827), Clane, ♂ 11 July 1972, ♂ pupa 22 July 1972, JPOC; **Sallins** (N8823) [R. Liffey], MVLT ♀ 29 June 1977, MDCW, det. JPOC (NMI). **KILKENNY: R. Nore** (S4472), larvae 16 August 2004, PS, (S6337), Inistioge, ♀ 21 July 2015, JPOC/MAOC, det. JPOC. **LAOIS: R. Barrow** (N6301), Dunrally Bridge, ♀ 3 August 1986, CM/OSF (SINMNH). **LEITRIM: Bonet R.** (G8444), larvae 25 June 1991, (G8534), larvae 24 June 1991, (G8738), larvae 24 June 1991, DAG/JML, det. JML; **L. Gill** (G7934), Sriff Pier, larvae 19 July 1989, (G7933), Pier Bay, larvae 19 July 1989, DAG/JML, det. JML. **LIMERICK: R. Shannon** (R6663), Castleconnell, ♂ 3 August 1988 (NMI), (R5757), St John's Castle, ♂♀ 5 June 1992, JPOC. **LONGFORD: L. Naback** (N2494), adults May-September 1964, MK. **MAYO: Achill** [Island] (F6405), ♂ 7 June 1809, JNH, conf. JPOC (NMI); **Achill Island** (F7100), Sraheens L., ♂, [JNH], det. JPOC (NMI); **Castlebar** (M1188), adult 10 June 1946, JRH; **Castlebar L.** (M1188), ♀ 17 June 1909, [JNH], det. JPOC (NMI); **Castlebar Loughs** (M0988), (M1188), (M1190), (M1389), adults May-September, MK; **Clare Island** (L6985), MT ♂ 10 June 1999, SF, conf. JPOC (NMI); **L. Carra** (M1673), adults May-September 1964, MK, (M1673), April, grab 5 larvae, AFF, det. JPOC, (M1668), on river, ♂♂♀♀ 21 May 1977, JPOC; **L. Feeagh** (F9700),

larvae 1996/1997, JW; **L. Mask** (M1259), (M1465), adults May-September, MK, (M1258), Killimor, adult May 1946, JRH; **L. Moher** (L9777), larva 1996/1997, JW; **Louisburgh** (L8080), adult 17 July 1910, CJM, det. JRAG (IM) (per IDW); **Westport** (L9984), 3♂♂, JJFXK, conf. JPOC (NMI). **MEATH: Kells Blackwater R.** (N8172), larva & ♂ pupa 8 July 1971, AFF, det. JPOC; **L. Sheelin** (N4582), Gortport, ♀ 22 September 1973, JPOC, (N4482), Goreport Bay, IETS 1973/1974 adult, PG; **R. Blackwater** (N7377), west of Kells, ♀ 1 August 1986, CM/OSF (SINMNH); **R. Boyne** (N9972), Rosnaree, adults 29 May 1945 & 14 May 1946, JRH, (N8768), 3 larvae & ♂ pupa 16 December 1971, (N9262), tributary, 3 larvae 16 December 1971, (N8464), tributary, 5 larvae 16 December 1971, AFF, det. JPOC, (N9070), Dunmore Castle, 4 larvae 5 September 1988, MFOG, det. JPOC, (N8768), ♂♂ 24 May 1988, MFOG, det. JPOC, (N9070), larvae 5 September 1988, DAG/JML, det. JML; **Trimblestown R.** (N6967), larvae April 1990, DAG/JML, det. JML. **ROSCOMMON: L. O'Flynn** (M5878), ♀ 16 August 2001, JPOC; **L. Ree**, adult May 1947, Farran, det. JRH, (N0245), Yellow Island, adults 22 August 1958, PHW (BMNH), (M9949), Carnagh Bay, adults 25 August 1958, PHW (BMNH); **R. Suck** (M8257), above Athleague, 8♂♂7♀♀ 15 August 2001, JPOC. **SLIGO: L. Bo** (G7918), adults May-September 1964, MK; **L. Gill** (G7234), Hazelwood, larvae 20 July 1989, (G7331), Slish Wood, larvae 20 July 1989, DAG/JML, det. JML; **R. Unshin** (G7025), tributary of, adult 8 September 1946, JRH. **TIPPERARY: Brownstown R.** (S1665), larvae 10 March 1992, DAG/JML, det. JML; **Clonmel** (S2022) [R. Suir], ♂ 16 June 1925, AWS, det. JPOC (NMI); **Gortmore** (M8500) [L. Derg], ♂♀♀ 18 June 1984, KGMB, det. JPOC (NMI); **Kilmastulla R.** (R8172), (R8072), (R7571), (R7269), (R7169), (R6867), larvae/adults 1976-1977, MAOC; **Luska Quay** (R8289), ♂♀ 7 July 1986, KGMB, det. JPOC (NMI); **R. Black** (S1957), larvae 5 September 1991, DAG/JML, det. JML; **R. Clover** (S1959), larvae 10 March 1992, DAG/JML, det. JML; **R. Drish** (S2163), larvae 10 March 1992, DAG/JML, det. JML; **R. Suir** (S0854), Holycross, adults May-September, MK, (S1258), larvae 10 March 1992, (S1255), larvae 19 September 1991, 10 March & 22 May 1992, DAG/JML, det. JML. **WATERFORD: Carrick on Suir** (S3621), streams near, ♀ 12 July 1989, JPOC; **Dunhill Castle** (R5000) [R. Ann], ♂ 11 July 1989, JPOC/MAOC, det. JPOC; **Mahon Falls** (S3108), stream near, ♂ 25 July 2015, JPOC/MAOC, det. JPOC; **Woodstown** (S6905), *Phragmites* bed, ♀ 2 July 1983, JPOC (NMI). **WESTMEATH**: **Athlone** (N0341) [R. Shannon], ♂♂♀♀ 28-29 June & 4 July 1888, JJFXK (BMNH, NMS), ♂♀ 28 June & 2♀♀ 29 June 1888, [JJFXK], conf. JPOC (NMI); **L. Derravaragh** (N4663), adults May-September 1964, MK, IETS 1973/1974: (N4169), Coolure Bay, 9 adults, (N4168), near Derrya, adult, PG; **L. Ennell** (N4146), adults May-September 1964, MK, adult 21 May 1945, JRH, (N3847), 179 larvae & ♀ pupa sheltered rocky shore, 9 larvae exposed rocky shore & 30 larvae reed bed, 15 May 1973, (N4686), Crover, ♂ 6 August 1990, (N4046), Tudenham, 2♀♀ 9 July 1997, JPOC, IETS 1973/1974: (N4048), Shaunoge Shallows,

2 adults, (N4149), Rushy Island, adult, (N4147), Goslin Island, 2 adults, (N4045), Carrick Bay, 4 adults, (N3845), Croincha, adult, PG; **L. Lene** (N5368), larvae 1996/1997, JW; **L. Owel** (N4156), larvae 1996/1997, JW; **L. Ree** (N0245), Carby [Carberry] Island, adult 18 August 1958, PHW (BMNH); **R. Deel** (N5565), larvae July 1991, DAG/JML, det. JML. **WEXFORD: Corock R.** (S8921), 2♂♂♀ 20 July 2015, JPOC/MAOC, det. JPOC; **J. F. Kennedy Park** (S7218), streams, ♀ 17 July 2013, JPOC, (S7219), streams, ♂♀ 7 July 2014, JPOC; **Oaklands Wood** (S7125), beside small stream, ♀ 29 May 1987, ♀ 4 August 2005, JPOC; **R. Boro** (S9636), stream entering river at Soldiers Hole, larva 23 July 2015, JPOC/MAOC, det. JPOC. **WICKLOW: Avoca R.** (T1982), 2♂♂ 21 July 1973, JPOC; **Avondale** (T1986) [R. Avoca], ♀♀ 27 May 1988, JPOC; **Ballinglen** (T0675), larva April 1973, JPOC; **Ballynastocken** (B'stocken) (G0207), ♀ 3 August 1950, AWS, det. JPOC (NMI); **Brown's Beck Brook** (S9398), ♂4♀♀ 24 July 1973, (S9194), (Carrigower R.), ♀ 23 July 1973, JPOC; **Devil's Glen** (T2499), ♂ 23 June 1929, AWS, det. JPOC (NMI); **Fassaroe** (O2317), ♀ 27 June 1909, conf. JPOC (NMI); **Glen of the Downs** (O2611), system of spring runnels, lots of *Fagus* and *Quercus* litter, larvae 11 March 1984, IDW; **Glendalough** (T1196), 4♂♂♀ 31 July 1986, CM/OSF (SINMNH); **L. Dan**, 32 larvae exposed rocky shore and 12 larvae sheltered rocky shore, 27 April 1973, (O1504), ♂ 1 August & 2♂♂ 4 August 1972, JPOC, (O1502), larva 1996/1997, JW; **Lower Lake, Glendalough** (T1196), ♂ 21 July 1973, JPOC; **Lower L. Bray** (O1316), larvae 1996/1997, JW; **R. Derriana** [Derneen] (S9987), larva 23 July 1973, JPOC; **R. Glencullen** (O1919), 3♂♂♀ 22 July 1973, JPOC; **R. Slaney** (S8892), LT 2♀♀ 24-25 July 1973, JPOC; **Russelltown Park** (N9610), stream feeding lake, lower section, larvae 10 March 1984, IDW; **stream** (O1416), exiting Lower L. Bray, ♂ 22 July 1973, JPOC; **stream** (S8695), larva 20 September 1973, JPOC; **Upper Lake Glendalough** (T1096), 2♂♂3♀♀ 21 July 1973, JPOC.

BERAEIDAE

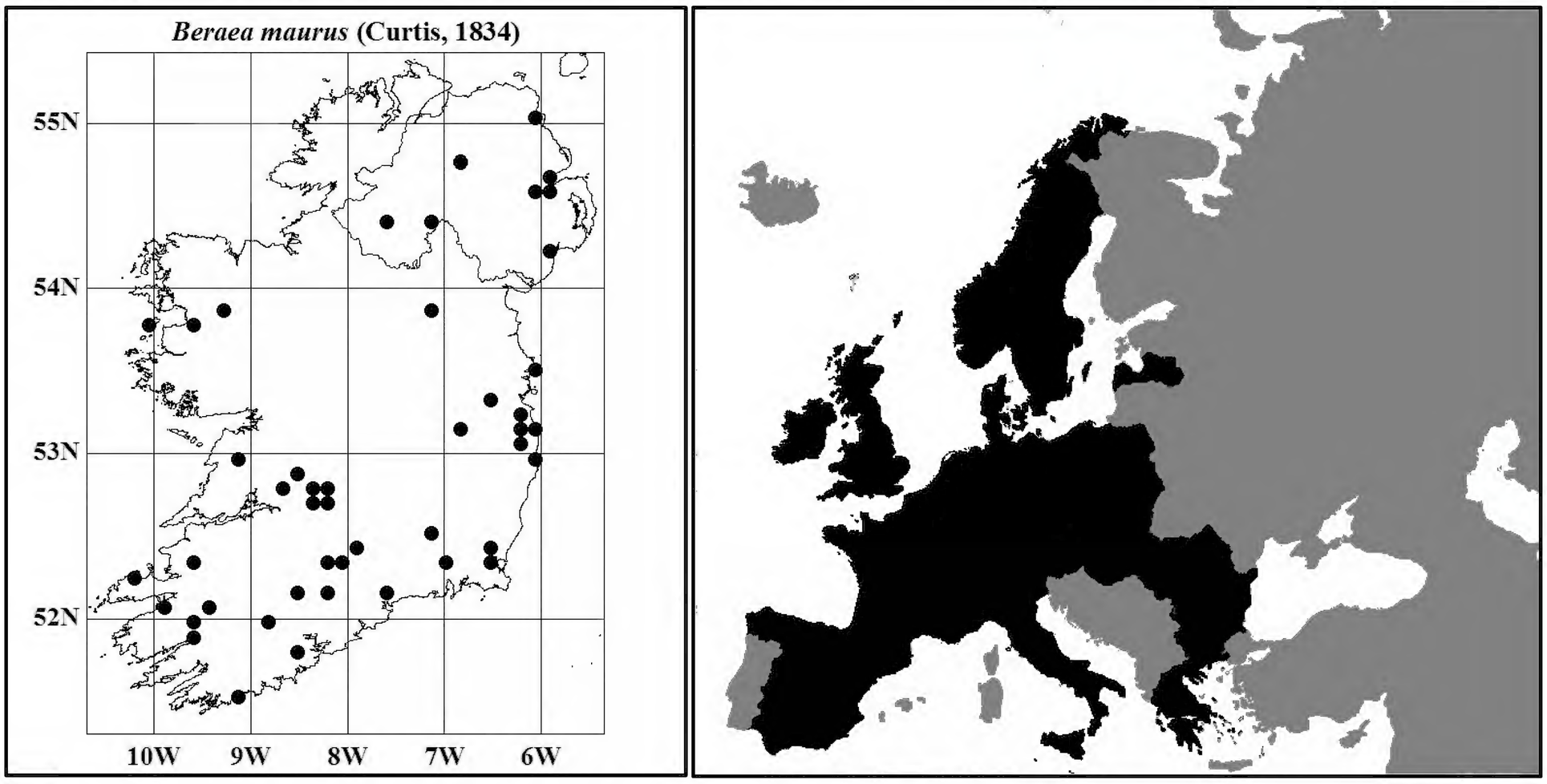
121. *Beraea maurus* (Curtis, 1834)

Beraea maurus is widely distributed in Ireland but under-recorded. The cased larvae occur in spring runnels, tufa springs, oozes, trickles and marshes. The habitats are often semi-terrestrial and full of dead leaves or mosses. *B. maurus* particularly likes woodland (Wallace, pers. comm.). The larvae are mainly shredders but also graze. Woody debris and associated fungi are the preferred food (Waringer and Graf, 2011). The curved tapering cases are composed of sand grains. The adults will often climb up vegetation when they are disturbed. The species is widespread in Europe but not known from much of the east.

Flight period: June–August (17 June–16 August).

Counties and 10km squares: Antrim, Cavan, Clare, Cork, Derry, Down, Dublin, Fermanagh, Kerry, Kildare, Kilkenny, Mayo, Tipperary, Tyrone, Waterford, Wexford, Wicklow (17/32). The species is known from forty-six 10km squares (46/1019).

FIGURES 294-295. Known Irish and European distributions of *Beraea maurus*.



Published records

McLachlan, 1885 (**ANTRIM:** Cave Hill (J3279)). *King, 1888a* (**ANTRIM:** Cave Hill (Belfast) (J3279). **KERRY:** Ardagh Laogh (V9888); Cloghereen (V9787); Dinish (V9385); Torc Cascade (V9684). **MAYO:** Carrowbeg R. (M0084); Knappagh Laogh [Knappaghbeg] (M0080)). *Carpenter, 1902* ([**ANTRIM**]**:** Colin Glen (J2771)). *King and Halbert, 1910* (**ANTRIM:** Cave Hill near Belfast (J3279). **CORK:** Glandore (W2235). **KERRY:** Ardagh (V9888); Cloghereen (V9787); Dinish (V9385); near Kenmare (V9471); Torc (V9684). **MAYO:** Carrowbeg R. (M0084); Knappagh L. [Knappaghbeg] (M0080). **WEXFORD:** Edenvale (T0427) [R. Sow]; Killurin (S9726) [R. Slaney]). *Halbert, 1912* (**MAYO:** Castlebar (M1188); Westport (L9984)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O1919) [An * in this paper indicates adults taken and determined by JPOC]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Wise, 1984* (**KERRY:** Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 2 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 15 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers [probably washed in]). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Hancock, 2014* (**DOWN:** Marshes (J3631)). *O'Connor and Davy-Bowker, 2014* (**DERRY (LONDONDERRY):** R. Douglas (H7796). **FERMANAGH:** Foxhill Burn (H2752). **TYRONE:** Fury R. (H5551); Glenariff R. (D2221)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R9163), (R8863), (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8668), (R8165), (R8467), (R8667), (R8168); R. Tar (R9021), (R8920), (R9419), (R9019), (R8919), (R9117), (R9416)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *Baars et al., 2014* (**IRELAND:** recorded in 1 of 12 upland peatland lakes).

Unpublished records and voucher specimens

ANTRIM: Belfast (J3473), adults 1885, CGB, det. RMCL, ♂ conf. JPOC (BMNH). **CAVAN: Virginia Woods** [Deerpark] (N5987), ♀ 28 July 1994, JPOC. **CLARE: R. Fergus** (R2888), Corofin, adult 17 July 1946, JRH; **stream** (R5267), ♀ 12 July 1973, JPOC; **stream** (R6877), entering Tinarana Bay, L. Derg, 5♂♂3♀♀ 17 June 1976, JPOC (NMI). **CORK: Glandore** (W2235), ♂♀, conf. JPOC (NMI); **Glinny, Riverstick** (W6658), seasonal streams/ponds in alder woods, MT 4♂♂7♀♀ 8-28 June 2005, MCDS, det. JPOC; **Rahan** (W6398), marshy area near small river, ♂ 6 July 1989, JPOC; **R. Araglin Catchment** (R8702), PSG (pers. comm.). **DOWN: Newcastle** (J3631), marshes, ♂ 23 July 1912, JJFXK, det. JPOC (HMAG). **DUBLIN: Lambay Island** (O3150), ♀♀ June 1906 (misidentified as *Beraea pullata*), [JNH], det. JPOC (NMI). **KERRY: Glenahoo R.** (Q5410), ♀ 7 July 1973, JPOC; **Killarney**, ♀ 29a June 1887, JJFXK, conf. JPOC (NMI), adult July 1946, BPB, det. JRH; **L. Caragh** (V7392), stream near lake, ♀ 5 July 1973, JPOC; **L. Looscaunagh** (V8979), stream entering, 3♂♂3♀♀ 4 July 1973, JPOC (NMI); **stream** (Q9025), Kilflynn, ♀ 7 August 1973, JPOC. **KILDARE: Louisa Bridge** (N9936), tufa spring, larvae 12 March 1984, IDW; **Newbridge (Pollardstown) Fen** (N7715), *Schoenus*/*Spaghnum* fen, D-vac ♂♂♀♀ 24 June 1989, JAG, det. JPOC (NMI), tufa spring, ♂ reared 14-23 July 1990, PA, det. JPOC (NMI). **KILKENNY: waterfall near Inistioge** (S6437), 2♀♀ 10 July 2014, JPOC, ♂ 21 July 2015, JPOC/MAOC, det. JPOC; **Woodstock House** (S6437), Inistioge, ♀ 24 July 1987, JPOC. **MAYO: Clare Island** (L6985), adult July 1910, CJM (IM) (per IDW). **TIPPERARY: Glencarra Wood** (S0326), small stream, ♀ 16 August 2000, JPOC. **WATERFORD: streams** (S3202), near the Vee, 6♂♂3♀♀ 20 July 1987, JPOC. **WEXFORD: Oaklands Wood** (S7125), stream, 2♂♂ 29 June 2014, JPOC/MAOC, det. JPOC; **R. Boro** (S9636), stream entering river at Soldiers Hole, ♀ 23 July 2015, JPOC/MAOC, det. JPOC; **Wexford**, ♂♀ 28 June & ♂ 15 July 1902, JJFXK, conf. JPOC (NMI). **WICKLOW: Calary Lower** (O2311), ♂ 12 July 1983, JPOC; **Devil's Glen** (T2499), ♀ 7 August 1990, JPOC/MAOC, det. JPOC; **Glen of the Downs** (O2611), system of spring runnels, lots of *Fagus* and *Quercus* litter, large larvae and immature pupa, 11 March 1984, IDW; **Glencullen R.** (O1919), ♀ 22 July 1973, JPOC; **Knocksink Woods** (O2118), streams, MT 2♀♀ 6-10 July 1995, CR, det. JPOC, (O2117), MT by flush beside woodland, 2♀♀ 26-30 June 1995, 2♂♂♀ 3-6 July 1995, ♀ 6-10 July 1995, CR, det. JPOC; **Vartry R.** (T2797), ♀ 20 July 1973, JPOC (NMI).

122. *Beraea pullata* (Curtis, 1834)

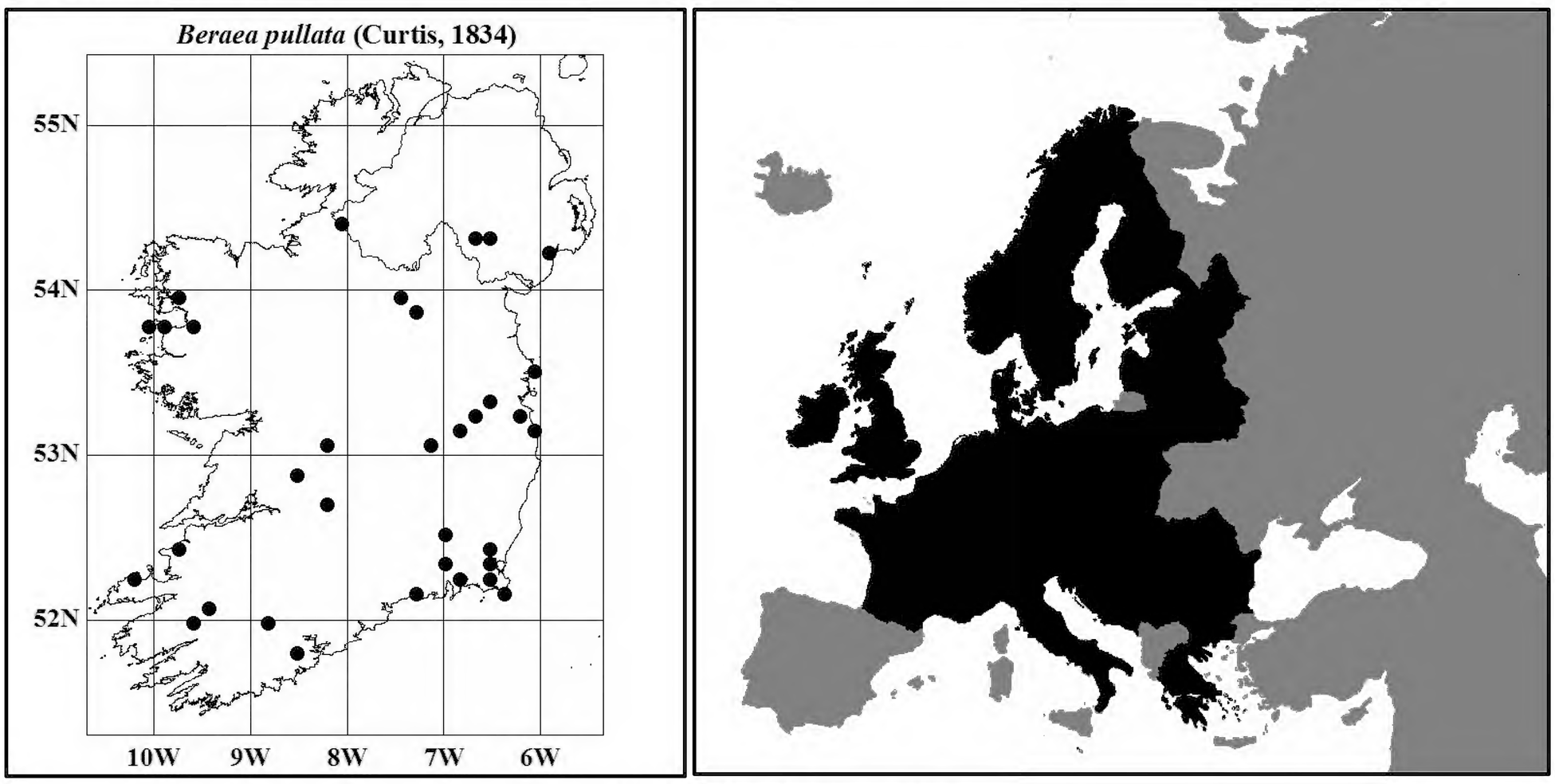
Beraea pullata is widely distributed in Ireland. Although undoubtedly under-recorded, the species appears to be rarer than *B. maurus*, preferring more open flowing swamp areas. The cased larvae occur in seepage areas in marshes, fens and beside rivers or streams where they live among dense fibrous root masses. The curved tapering cases are composed of sand grains. According to Waringer and Graf (2011),

the feeding strategies of *B. maurus* and *B. pullata* are different. These authors assign the following feeding types to *B. maurus*: grazer/scraper (3) and shredder (7) and to *B. pullata*: grazer/scraper (2), shredder (2) and gather/collector (6). The species is widespread in much of Europe but not known from the Iberian Peninsula.

Flight period: May–July (28 May–24 July) (September). An adult was taken on 7 September.

Counties and 10km squares: Armagh, Carlow, Cavan, Clare, Cork, Down, Dublin, Fermanagh, Kerry, Kildare, Laois, Mayo, Tipperary, Waterford, Wexford, Wicklow (16/32). The species is known from thirty-four 10km squares (34/1019).

FIGURES 296-297. Known Irish and European distributions of *Beraea pullata*.



Published records

King, 1888a (**MAYO:** Carrowbeg R. (M0084)). *Johnson, 1893* (**ARMAGH:** Mullinares [Mullinure] (H8846)). *King and Halbert, 1910* (**ARMAGH:** L. Gilly [lake near Loughgilly] (H9937); Mullinure (H8846). **DUBLIN:** Lambay Island (O3150). **MAYO:** Carrowbeg. R. (M0084). **WEXFORD:** Edenvale (T0427) [R. Sow]; Johnstown Castle (T0216) [small lakes]). *Halbert, 1912* (**MAYO:** Louisburgh (L8080); Westport (L9984)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 1 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 3 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Donohue et al., 2009* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Davy-Bowker, 2014* (**FERMANAGH:** R. Roogagh (Glen R.) (G9451)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilbao (R9163), (R8863), (R8256)). *Kavanagh and Harrison, 2014* (**CORK:** drainage ditch (W4881)). *Baars et al., 2014* (**IRELAND:** recorded in 1 of 12 upland peatland lakes).

Unpublished records and voucher specimens

ARMAGH: Armagh (H8745), ♂ 10 June 1893, WFJ, conf. JPOC (NMI). **CARLOW: Bahana Woods** (S7239), ♂ 14 June 1991, JPOC; **R. Barrow** (S7238), St Mullins, ♀ 17 June 1991, JPOC/MAOC, det. JPOC. **CAVAN: L. Sheelin** (N4686), ♂♀ 17 June 1973, JPOC; **stream** (N4096), ♀ 16-17 June 1973, JPOC. **CLARE: stream** (R6877), entering Tinarana Bay, L. Derg, ♂ 17 June 1976, JPOC (NMI). **CORK: Glinny, Riverstick** (W6658), seasonal streams/ponds in alder woods, MT 2♂♂9♀♀ 8-28 June 2005, MCDS, det. JPOC. **DOWN: Slieve Donard** (J3529), in flushes at 420m & 450m, adults 24 July 2012, A. Foster. **DUBLIN: Ballybrack** (O2423), ♀ 14 June 1977, MDCW, det. JPOC (NMI). **KERRY: Glenahoo R.** (Q5410), ♀ 7 July 1973, JPOC; **L. Leane** (V9686), boat house, ♂ 28 May 1974, JPOC; **near Lerrig Peat Bog** (Q7928), adult 7 September 1982, EGH, det. JRAG (BMAG) (per IDW); **R. Cloghereen** (V9787), near hotel, 2♂♂ 28 May 1995, JPOC; **stream** (V9385), at Dinish, 5♂♂♀ 31 May 1995, JPOC; **Torc Cascade** (V9684), ♂ 29 May 1974, JPOC (NMI). **KILDARE: Louisa Bridge** (N9936), marshy area, ♂ 6 June 1991, JPOC; **Newbridge (Pollardstown) Fen** (N7716), ♀ 9 June 1984, JPOC/MAOC, det. JPOC (NMI); **Straffan** (N9326), fen/canal, ♂ 28 May 1982, JPOC. **LAOIS: The Derries** (N5805), in vegetation on marshy ground beside lake, 2♂♂ 11 June 1983, JPOC/MAOC, det. JPOC (NMI). **MAYO: Clare Island** (L6985), ♀ 17 June 1996, A. P. Leftwich, det IDW, MT adult 11 June 1998, SF, conf. JPOC (NMI); **L. Moher** (L9777), larva 1996/1997, JW; **Louisburg** (L8080), adult 19 July 1910, CJM (IM) (per IDW); **Mayo National Park** (F8607), cutover blanket bog near Owenduff R., MT ♂ 30 May-20 June 1997, MCDS, det. JPOC; **Westport** (L9984), ♂, JJFXK, conf. JPOC (NMI). **TIPPERARY: L. Derg** (R8399), Kylanoe Point, d-vac ♂♂♀♀ 19 June 1986, KGMB, det. JPOC. **WATERFORD: Fennor Bog** (S5301), ♀ 8 July 2014, JPOC. **WEXFORD: Irish National Heritage Park** (T0022), near Ferrycarrig Castle, marsh/*Betula*, ♂ 2 June 1986, JPOC; **Johnstown Castle** (T0216), lake outflow, 2♀♀ 8 June 1986, JPOC; **Nethertown** (T1104), ♂ 6 June 1986, 2♀♀ 2 June 1987, JPOC/MAOC, det. JPOC; **Oaklands Wood** (S7125), stream, ♂♂ 29 May 1987, JPOC (NMI); **Tintern Abbey** (S7910), ♂ 15 June 1990, JPOC, stream, ♂ 1 July 2014, JPOC/MAOC, det. JPOC; **Wexford**, ♀ 30 June & ♂ 11 July 1902, JJFXK, conf. JPOC (NMI). **WICKLOW: Kilmacanogue** (O2513), marsh flowing by main stream, with litter of *Salix*, *Alnus* etc., marsh marigold, *Iris* etc. emergent, larva 11 March 1984, IDW.

123. *Beraeodes minutus* (Linnaeus, 1761)

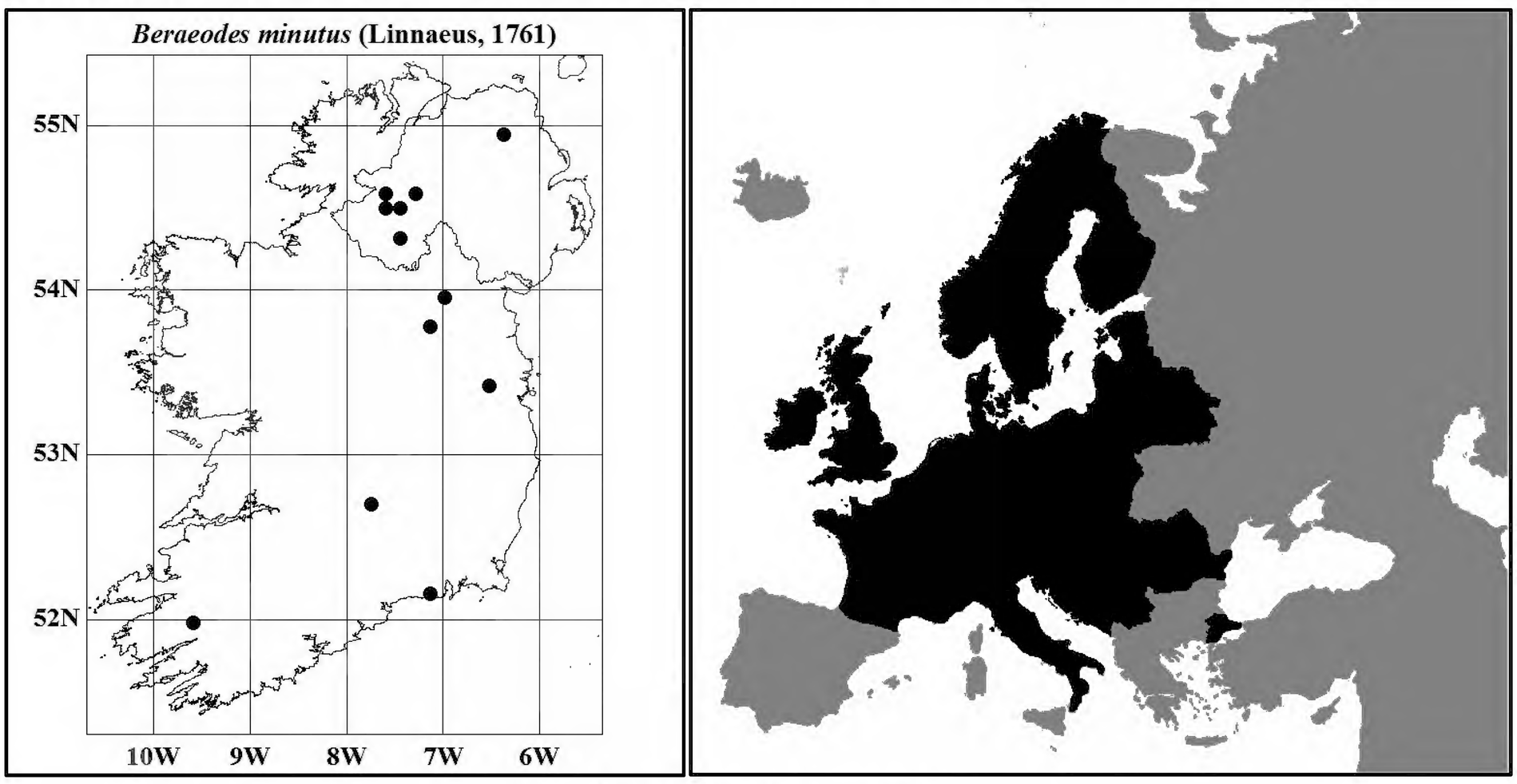
Beraeodes minutus is a local Irish species. The cased larvae are very distinctive in appearance due to the extensive black areas on the head and the dark mosaic pattern of dark spots on the pronotum. As a result, except for one adult, the Irish records are based on larvae. The species has been found in a lake, rivers and a drainage ditch. In the Drish River, County Tipperary, the species was collected in a tributary at a site

dredged and deepened by Bord na Mona (the Irish Peat Board) and now characterised by a permanent layer of peat silt (30cm deep). The curved tapering cases are composed of sand grains. Wallace *et al.* (1983) mention an empty pupal case of *Limnephilus flavicornis* or *L. marmoratus* which had three cases of *B. minutus* incorporated into it as building material. The larvae are grazers/scrapers. Wallace (1991) has observed that they are associated with the exposed roots of marginal vegetation and trees, usually where these touch a mineral substratum. The species occurs in much of Europe.

Flight period: May (22 May) (only one adult). Barnard and Ross (2012) give the British flight period as May–June.

Counties and 10km squares: Antrim, Fermanagh, Cavan, Kerry, Meath, Tipperary, Tyrone, Waterford (8/32). The species is known from twelve 10km squares (12/1019).

FIGURES 298-299. Known Irish and European distributions of *Beraeodes minutus*.



Published records

O'Connor, 1978a (**KERRY**). *Wallace et al., 1983* (**CAVAN:** Parker's L. (N6497), (drainage ditch). **KERRY:** Upper Lake near the Long Range (V9383)). *O'Connor and Wise, 1984* (**KERRY:** Upper Lake [Killarney] (V9383)). *O'Connor, 1987* (**CAVAN**. **KERRY**. **TIPPERARY**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Duke, 1994* (**MEATH:** R. Tolka (O0143) (silted stretch); Upper Inny (N5578) (silted stretch)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Bracken, 1998* (**KERRY:** Killarney). *Wright et al., 2000* (**NORTHERN IRELAND:** 4 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 9 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *O'Connor and Nelson, 2012* (**KERRY**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2014* (**KERRY:** Upper Lake near the Long Range (V9383). **CAVAN**. **MEATH**. **TIPPERARY**. **WATERFORD:** Ballymacaw Cove (X6499) (small river). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** R. Clogh (D0613). **FERMANAGH:** R. Colebrooke (H3744); R. Glendurragh (H2265).

TYRONE: Black Water (H2974); R. Camowen (H4673); R. Owenreagh (H3365)).

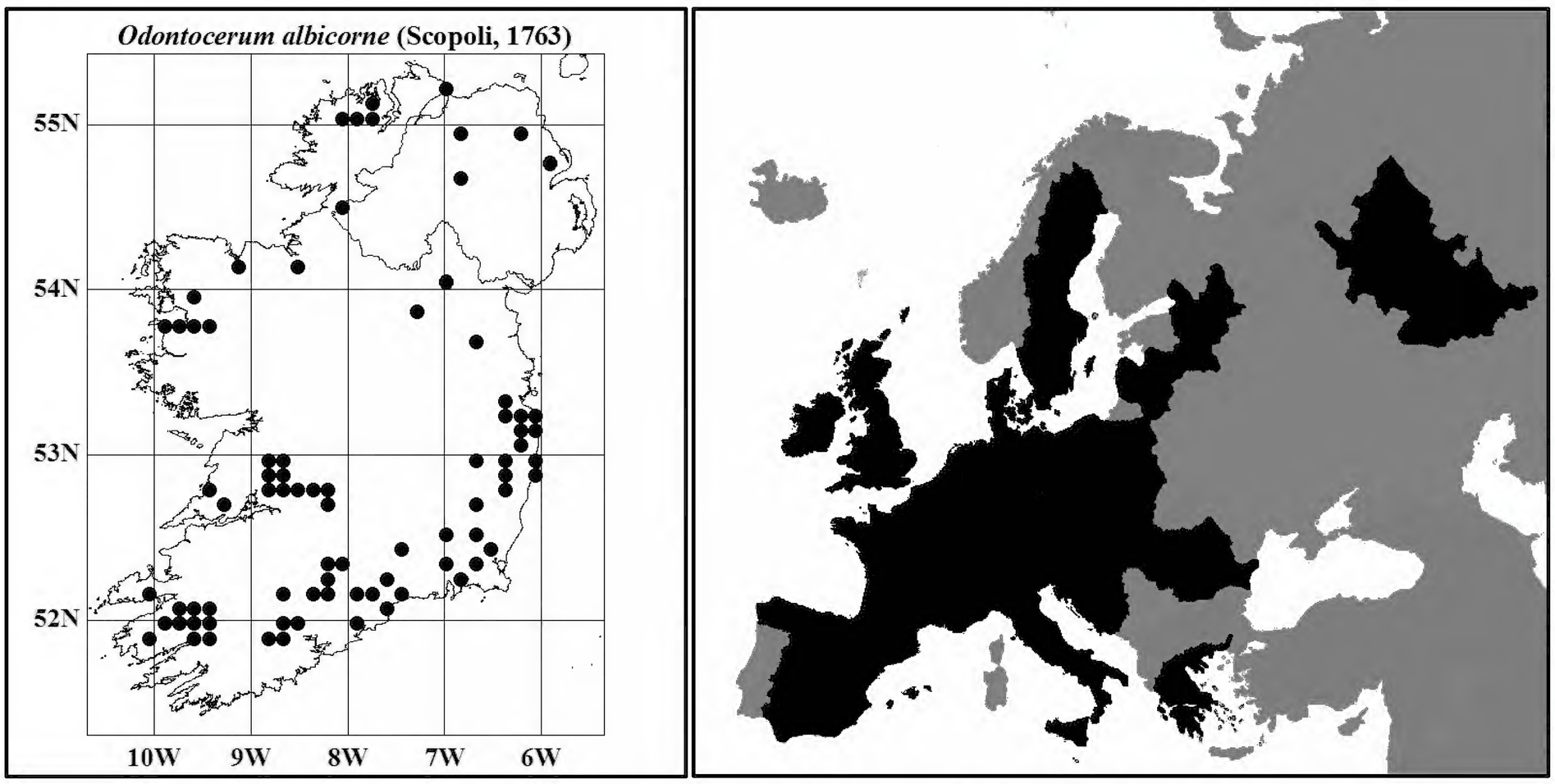
Unpublished records and voucher specimens

CAVAN: Parkers's L. (N6497), empty larval and pupal cases 23 August 1982, BW (NML). **KERRY: Upper Lake, Killarney** (V9383), Petersen grab larva December 1971, UCD, det. IDW (NMI). **MEATH: R. Inny** (N5578), near Millbrook, larva October 1992, M. Duke, conf. JPOC (NMI); **R. Tolka** (O0143), north-east of Dunboyne, 6 larvae October 1992, M. Duke, conf. JPOC (NMI). **TIPPERARY: Drish R.** (S2157), Clover tributary, site dredged and deepened by Bord na Mona and now characterised by a permanent layer of peat silt (30cm deep), larva January 1981, P. Byrne, conf. JPOC (NMI). **WATERFORD: Ballymacaw Cove** (X6499), small river running down to cove, ♀ 22 May 1997, JPOC (NMI).

ODONTOCERIDAE

124. *Odontocerum albicorne* (Scopoli, 1763)

FIGURES 300-301. Known Irish and European distributions of *Odontocerum albicorne*.



Odontocerum albicorne is widely distributed in Ireland. The cased larva is easily recognised due to the presence of an anchor-shaped mark on the head. The case is curved and composed of sand grains. Wallace, Wallace and Philipson (2003) point out that the case is constructed in a different manner to that of other trichopteran species in Ireland. Instead of the building material being joined together around an internal silken tube, each sand grain in *O. albicorne* is carefully mortared to its neighbours with silk and the joints are reinforced internally with silken braces. The resultant case is very strong and rigid. When breaking open the pupal case to obtain the pupal stage, it is very noticeable that it snaps without first deforming. The rear end opening of the larval case is closed with a pebble and the front end similarly closed in the pupal stage. The larvae occur in streams and rivers. They are omnivorous scavengers, mainly feeding at night. In the Glenfinnish River, County Cork, five larval instars

were identified. The data indicated the possibility of two cohorts in a year, one commencing in late autumn and the other in early spring (Sangpradub, Giller and O'Connor, 1999). The adults have toothed antennae and a distinctive flight. The species is found throughout much of Europe.

Flight period: May–September (28 May–30 September).

Counties and 10km squares: Antrim, Carlow, Cavan, Clare, Cork, Derry, Donegal, Dublin, Fermanagh, Kerry, Mayo, Meath, Sligo, Tipperary, Tyrone, Waterford, Wexford, Wicklow (18/32). The species is known from eighty 10km squares (80/1019).

Published records

Stephens, 1836 (**KERRY:** near Killarney). *Hagen, 1860-1861* ([**KERRY**]**:** Killarney). *King. 1888a* (**KERRY:** Denough [Deenagh] R. (V9792); Horses' Glen (V9981); Killarney. **MAYO:** Cogaula (M0486) and Mount Brown [Kinlooey] (M0381) Laoghs). *King and Halbert, 1910* (**DONEGAL:** Clonkillybeg [L.] (C1219); Cottian (C1318) [Leannan R.]; Glenbeagh (B9918) [Owenbeagh R.]; Loughs Gorteen (C0818) and Reelan (C1327); R. Lennan [Leannan] (C1318). **KERRY:** Deenagh R. (V9792); Horse's Glen (V9981); Killarney. **MAYO:** Cogaula (M0486) and Mount Brown [Kinlooey] (M0381) Loughs. **WATERFORD:** Cappoquin (X0999); Glenshelane (S1203). **WEXFORD:** Edenvale (T0427) [R. Sow]). *Halbert, 1912* (**MAYO:** Louisburg (L8080); Westport (L9984)). *Beirne, 1939* (**WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Kennedy and Fitzmaurice, 1968a* (**CORK:** Connolly's Stream (Glashagarriff R.) (W4175)). *Toner and O'Connell, 1971* (**CORK:** Blarney (R. Martin) (W6176); Fermoy (R. Blackwater) (W8098); Mallow (R. Blackwater) (W5598); Mitchelstown (R. Funcheon) (R8113); Rathduff (R. Martin) (W5984)). *Partridge and Foy, 1972* (**MAYO:** L. Feeagh (F9700), (L9799)). *Clabby and Bracken, 1976* (**WICKLOW:** Glencullen R. (O2117) [An * in this paper indicates adults taken and determined by JPOC]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7480)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake (V9684)). *O'Connor, 1987* (**IRELAND:** widespread). *Kelly-Quinn and Bracken, 1988* (**DUBLIN:** Owendoher R. (O1325), (O1326), (O1427)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *O'Grady and King, 1992* (**MAYO:** Bunree R. (G3118), (G3120)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Giller, O'Connor and Kelly-Quinn, 1998* (**CORK:** Glenfinnish R. (R8810)). *Sangpradub, Giller and O'Connor, 1999* (**CORK:** Glenfinnish R. (R8810)). *Wright et al., 2000* (**NORTHERN IRELAND:** 2 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890), (V9689)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 56 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *de Eyto, 2011* (**MAYO:** Burrishoole and Owengrave catchments (F9604)). *Anon., 2011* (**WEXFORD:** Tinnokilla Stream (S9729)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and*

Ross, 2012 (**IRELAND**). *O'Connor, 2013b* (**KERRY:** L. Derriana stream (V6274); R. Flesk (V9789); R. Inny (V5572)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Legnagooly Burn (D1312); Six Mile Water (J3195). **DERRY (LONDONDERRY):** R. Agivey (C7912). **FERMANAGH:** R. Garvary (H0063). **TYRONE:** Lissan Water (H8081)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Bilboa (R8256), (R8961), (R8859), (R8558), (R8959), (R8758), (R8456); R. Mulkear (R8467), (R8667), (R8168); R. Tar (R9419), (R9019), (R8919), (R9117), (R9416)). *Anon., 2015a* (**KERRY:** Killarney National Park (V9590)).

Unpublished records and voucher specimens

CARLOW: R. Slaney (S9161), Clonegal, adult 31 August 1946, JRH; **St Mullins** (S7238), stream, 4 larvae & ♂♀ pupae 5 July 2014, MAOC/JPOC, det. JPOC. **CAVAN: L. Sheelin** (N4686), adult August 1946, JRH; **R. Annalee** (H6808), ♂ 30 September 1972, JPOC. **CLARE: Ardcloony R.** (R6770), ♂ 3 September 1973, JPOC; **Gounar R.** (R5166), larva & ♂ 12 July 1973, JPOC; **Quin R.** (R4174) [R. Rine], adults August-September, MK; **R. Bleach** (R5795), ♀ 13 July 1973, JPOC; **R. Cloon** (R1759), ♂ 8 July 1973, JPOC; **R. Rinne** (R4174), 2♂♂ 12 July 1973, JPOC; **stream** (R0871), ♀ 9 July 1973, JPOC; **stream** (R6085), larva & 4 prepupal larvae 13 July 1973, JPOC; **stream** (R5795), entering R. Bleach, larva & 2♂♂ pupae 13 July 1973, JPOC; **stream** (R4086), near Crusheen, entering O'Brien's Big Lake (R4082), ♂ 1 September 1973, JPOC. **CORK: R. Araglin** (R8703), larvae 1988-1990, NS; **R. Lee** (W5671), adults August-September, MK; **R. Owgarriff** [R. Owengarriff] (V5871), Waterville, adult 5 August 1968, JRH; **R. Shournagh** (W5380), larvae, MM, conf. JPOC (NMI). **DONEGAL: Carrowtrasna** (C6742), ♂ September 1981, DJOS, det. JPOC. **DUBLIN: Loughlinstown R.** (O2323), adult 7 August 1947, JRH. **KERRY: Killarney**, ♂ 25 June & ♀ 5 July 1887, JJFXK, conf. JPOC (NMI), adult July 1940, BPB, det. JRH; **L. Derriana** (V6274), stream near, LT ♂ 1-13 July 1979, JPOC (NMI); **Mangerton** (V9780), adult 17 August 1877, AEE, RMCL Coll. (BMNH); **R. Caragh** (V7881), ♂ 2-3 August 1975, JPOC (NMI); **R. Cloghereen** (V9786), near Blue Pool, ♂ 28 May 1995, (V9787), ♂ 28 May 1995, JPOC; **R. Cummeragh** (V5872), ♂♀ 26 August 1973, JPOC; **R. Deenagh** (V9590), larva July 1971, EJW (NMI); **R. Flesk** (V9689), 3♂♂♀ 25 June 1973, JPOC (NMI), larva 16 November 1971, EJW, det. IDW (NMI); **R. Gaddagh** (V8391), 2♂♂ 24 August 1973, JPOC (NMI); **R. Inny** (V5674), LT ♂ 5-6 July 1973, JPOC; **R. Owenschull** (Q5901), 8 larvae ♂♀ 7 July & 6♂♂2♀♀ 28 August 1973, JPOC; **R. Roughty** (V9873), larva 26 August 1973, (V9673), stream at, ♂♀ 4 July 1973, JPOC; **Torc stream** (V9684), 2 larvae 13 April & ♂ 26 August 1973, JPOC. **MAYO: Croagh Patrick** (L8981), Carrowmacloughlin, MVLT 4♂♂ 3 August 1989, KGMB, conf. JPOC; **Louisburgh** (L8080), adult 19 July 1910, CJM, det JRAG (IM) (per IDW). **MEATH: R. Boyne** (N9271), Stackallen, adult 3 August 1945, JRH. **SLIGO: R. Unshin** (G7025), tributary, adult 8 September 1946, JRH. **TIPPERARY: Kilmastulla R.** (R8172), (R8072), (R7269), larvae/adults 1976-1977, MAOC; **R.**

Lingaun (S4031), Slate Quarries, ♂♀ 21 August 2000, JPOC. **WATERFORD: Cappoquin** (X0999), ♀ 1 August 1902 (misidentified as *Sericostoma personatum*), JJFXK, det. JPOC (NMI); **Clonea Strand** (X3997), stream, ♂♂ 23 July 1987, JPOC; **Colligan R.** (S2205), ♂ 15 August 2000, (X2395), ♂ 15 August 2000, JPOC; **Glendine Bridge** [Glendine R.] (X0782), adult 20 August 1980, KGMB, det. JPOC (NMI); **Mahon Falls** (S3108), stream near, ♀ 25 July 2015, JPOC/MAOC, det. JPOC. **WEXFORD: Corock R.** (S8921), ♂3♀♀ 20 July 2015, JPOC/MAOC, det. JPOC; **Killoughrim Forest** (S9041), stream, 4 larvae & ♀ 3 July 2014, JPOC/MAOC, det. JPOC; **Oaklands Wood** (S7125), stream, ♀ 29 June 2014, JPOC/MAOC, det. JPOC; **R. Boro** (S9636), Soldiers Hole, ♂ 23 July 2015, JPOC/MAOC, det. JPOC; **stream** (S7806), Pollfur Bridge near Fethard, 3♂♂ 30 June 2014, JPOC/MAOC, det. JPOC; **Tintern Abbey** (S7910), stream, ♀ 1 July 2014, JPOC/MAOC, det. JPOC; **Urrin R.** (S8943), bridge near Mangan, larva 3 July 2014, MAOC/JPOC, det. JPOC; **Wexford** (T0427) [Edenvale], ♂ 11 July 1902, JJFXK, det. JPOC (NMI). **WICKLOW: Ballinglen** (T0675), larva April 1973, JPOC; **Browns Beck Brook** (Carrigower R.) (S9194), ♀ pupa 23 July 1973, JPOC; **Cookstown R.** (O2317), adult 15 July 1937, BPB (BMNH); **Delgany R.** (O2610), larva 20 July 1973, JPOC; **Devil's Glen** (T2499), ♀ 7 August 1990, JPOC/MAOC, det. JPOC; **Glen of the Downs** (O2611), ♂ 22 August 1981, JPOC; **Glencree** (O1418), adult 5 August 1946, JRH, (O2014), (Glencree R.), ♂ 19 August 1973, JPOC; **Glencullen R.** (O1919), LT 3♂♂♀ 18-19 August 1973, JPOC; **Potters R.** (T2985), 2♂♂ pupae & 3♂♂ 21 July 1973, JPOC; **R. Bray** (O2518), ♂♀ 14 August 1972, JPOC (NMI); **R. Ow** (T0981), ♂ 28 July 1973, JPOC; **R. Slaney** (S8892), LT ♂ 24-25 July 1973, JPOC; **stream** (T1593), near Ballardpark, 2♂♂ 21 July 1973, JPOC; **Vartry Reservoir** (O1903), LT ♀ 19-20 August 1973, JPOC; **Vartry R.** (T2797), ♂ 24 August 1972, ♂ 20 July (NMI) & ♀ 21 July 1973, JPOC.

MOLANNIDAE

125. *Molanna albicans* (Zetterstedt, 1840)

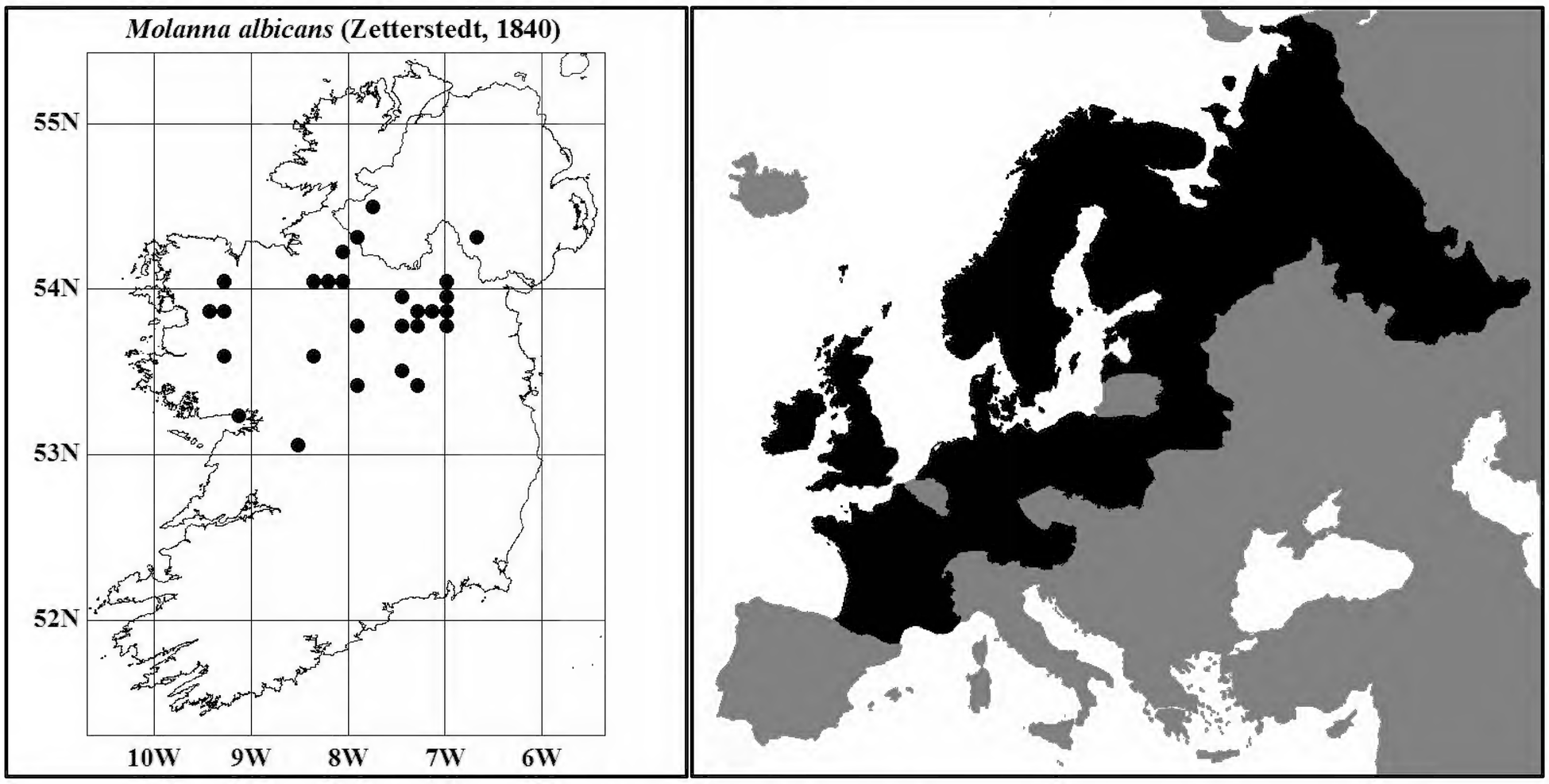
Molanna albicans has a local distribution, being mostly found in central and western Ireland. The larvae live in lakes and large slow flowing rivers. They feed on algae, diatoms and small plant parts (Wichard, Arens and Eisenbeis, 2002). The adults can occur in large numbers in some areas such as the River Shannon and the lakes of Cavan. The larvae have unusually shaped cases. They are composed of sand grains cemented together to form a convex shield-shaped plate incorporating a central tube and are well camouflaged against the bare substrata on which they are often found. The larvae move with bounding leaps. The case extension and leaping movement may help to prevent prey escaping (Wallace, 2004). Although the lateral extensions are costly with regard to transportation, they may reduce predation and also provide a lowered risk of being overturned (Otto, 2000). The adults have an unusual way of folding their greyish wings. They partly roll them around their bodies and are

therefore very distinctive looking in the field. The species mainly occurs in central and northern Europe.

Flight period: May–September (20 May–10 September).

Counties and 10km squares: Armagh, Cavan, Fermanagh, Galway, Leitrim, Longford, Mayo, Monaghan, Roscommon, Sligo, Westmeath (11/32). The species is known from twenty-seven 10km squares (27/1019).

FIGURES 302-303. Known Irish and European distributions of *Molanna albicans*.



Published records

King, 1888a as *Molanna palpata* (**WESTMEATH:** Shannon (N0341) between Athlone and L. Ree). *King, 1888c* as *Molanna palpata* (**WESTMEATH:** Athlone (N0341), R. Shannon near here). *King, 1891* as *Molanna palpata* (**ARMAGH:** Armagh (H8745)). *Johnson, 1896* as *Molanna palpata* (**ARMAGH:** Lowry's L. (H9144)). *King and Halbert, 1910* as *Molanna palpata* (**ARMAGH:** Lowry's L. (H9144) near Armagh. **WESTMEATH:** Shannon (N0341) between Athlone and L. Ree). *Praeger, 1950* as *Molanna palpata* (**ARMAGH**. **WESTMEATH**). *Hickin, 1967* as *Molanna palpata* (**CAVAN**). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* as *Molanna palpata* (**CAVAN:** L. Sillan (H7007), (H7106)). *O'Connor, 1987* (**ARMAGH**. **CAVAN**. **MONAGHAN**. **ROSCOMMON**. **WESTMEATH**). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** lakes and slow-flowing rivers in central Ireland). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** lakes and slow-flowing rivers in central Ireland). *Atalah et al., 2010* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**GALWAY:** upland lake (M6701), 183m). *Little and Free, 2013* (**LEITRIM:** L. McNean [Macnean Upper] (H0239). **WESTMEATH:** Killinure [L. Ree] (N0745)).

Unpublished records and voucher specimens

ARMAGH: Armagh (H8745), ♀ 9 July 1891, WFJ, conf. JPOC (NMI); **Lowry's L.** (H9144), adult 5 June 1895, det. RMCL (BMNH), ♂♀ 9 July 1891, WFJ, conf. JPOC (NMI). **CAVAN: Corrakane L.** (H4000), small lake, 6♂♂♀ 16 June & LT 7♂♂♀ 4-5 July 1973 (NMI), JPOC; **L. Cuilcagh** (N6389), ♂ 20 May 1974, 2 larvae exposed rocky shore, 29 March 1973, JPOC; **L. Moneen** (G9828), 6♂♂4♀♀ 3 August 1973, JPOC; **L. Mullagh** (N6785), ♀ 31 August 1972, 9♂♂3♀♀ 1 August 1973, 3♂♂♀ 20 May 1974, JPOC; **L. Ramor** (N6087), 3♂♂♀ 2 August 1973, JPOC; **L. Sheelin** (N4686), ♀ 10 June & ♂ 26 August 1946, JRH, Crover, ♂♀ 6 August 1990, JPOC, (N4182), ♀ 8 July 1975, MFOG, det. JPOC, (N4786), ♂♂♀♀ 5 August 1973, JPOC, (N4783), east shore, Tonagh, 3♂♂3♀♀ 30 July 2012, MG; **L. Sillan,** larva exposed rocky shore & 3 larvae reed bed, 26 March 1973, (H7106), 2♂♂ July 1971, 12♂♂13♀♀ 9 August 1972 (NMI), (H6906), ♂ 31 July-1 August 1973, ♀ 20 May 1974, (H6907), ♀ June 1971, (H7007), ♀ July 1971, light 14♂♂15♀♀ 27 July, ♀ 11 August & 6♂♂ 30 August, 1972, JPOC; **Moyduff Lake** (H6909), 4♂♂2♀♀ 10 August 1973, JPOC; **R. Annalee** (H6806), above L. Sillan, ♂ 27 July 1972, JPOC. **FERMANAGH: Lower L. Erne** (H1658), adult 26 May 1948, Beatty, det. JRH. **GALWAY: Hollygrove Lake** [Ballaghdacker L.] (M7857), ♀ 8 August 2001, JPOC. **LONGFORD: R. Shannon** (N0684), north of L. Forbes, ♂ 16 July 1978, JPOC. **MAYO: Castlebar Loughs** (M0988), (M1188), (M1190), (M1389), adults June-September 1964, MK; **L. Conn** (G1516), adult 10 September 1947, D. Shackleton, det. JRH; **L. Mask** (M1259), (M1465), adults June-September 1964, MK. **MONAGHAN: L. Moylemuck** (H6415), 4♂♂5♀♀ 27 July 1972, JPOC (NMI). **ROSCOMMON: Cornacarta L.** (G8309), adults June-September 1964, MK; **L. Arrow** (G9514), ♀ 9 July 1975, MFOG, det. JPOC. **SLIGO: L. Arrow** (G7711), adults June-September 1964, MK. **WESTMEATH: Athlone** (N0341) [R. Shannon], adults 15 August & 18a August 1888, [JJFXK], det. RMCL (including ♀ misidentified as *Molanna angustata*) (BMNH), 2♀♀ 15 August 1888, JJFXK, conf. JPOC (NMI), ♀ 15 August 1888, [JJFXK], conf. JPOC, Morton Coll. (NMS); **L. Ennell** (N4146), adults June-September 1964, MK; **L. Ree** (M2925), R. Shannon, Nun's Island, grab larva 14 July 1972, AFF, det. JPOC; **L. Sheelin** (N4381), off Goreport Point, IETS 1973/1974 adult, PG.

[*Molanna angustata* Curtis, 1834

There was a specimen labelled "Athlone 15/viii/88 Harwood Coll[ection] BM 1945-120" in drawer 33 of the main pinned collection of the Natural History Museum, London, under the series label *Molanna angustata*. Collected by King, it had been merely misplaced in the wrong series in the drawer for it is a ♀ *Molanna albicans* (det. JPOC). The published larval identifications are unsafe because Hickin's (1967) book contained only a description of *M. angustata*, the author stating that the immature stages of *Molanna palpata* [now *albicans*] were then unknown.

Published records

Moriarty, 1973a (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1974* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1978* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (IRELAND). This record is probably based on the misplaced specimen in the BMNH.]

LEPTOCERIDAE

[*Adicella filicornis* (Pictet, 1834)

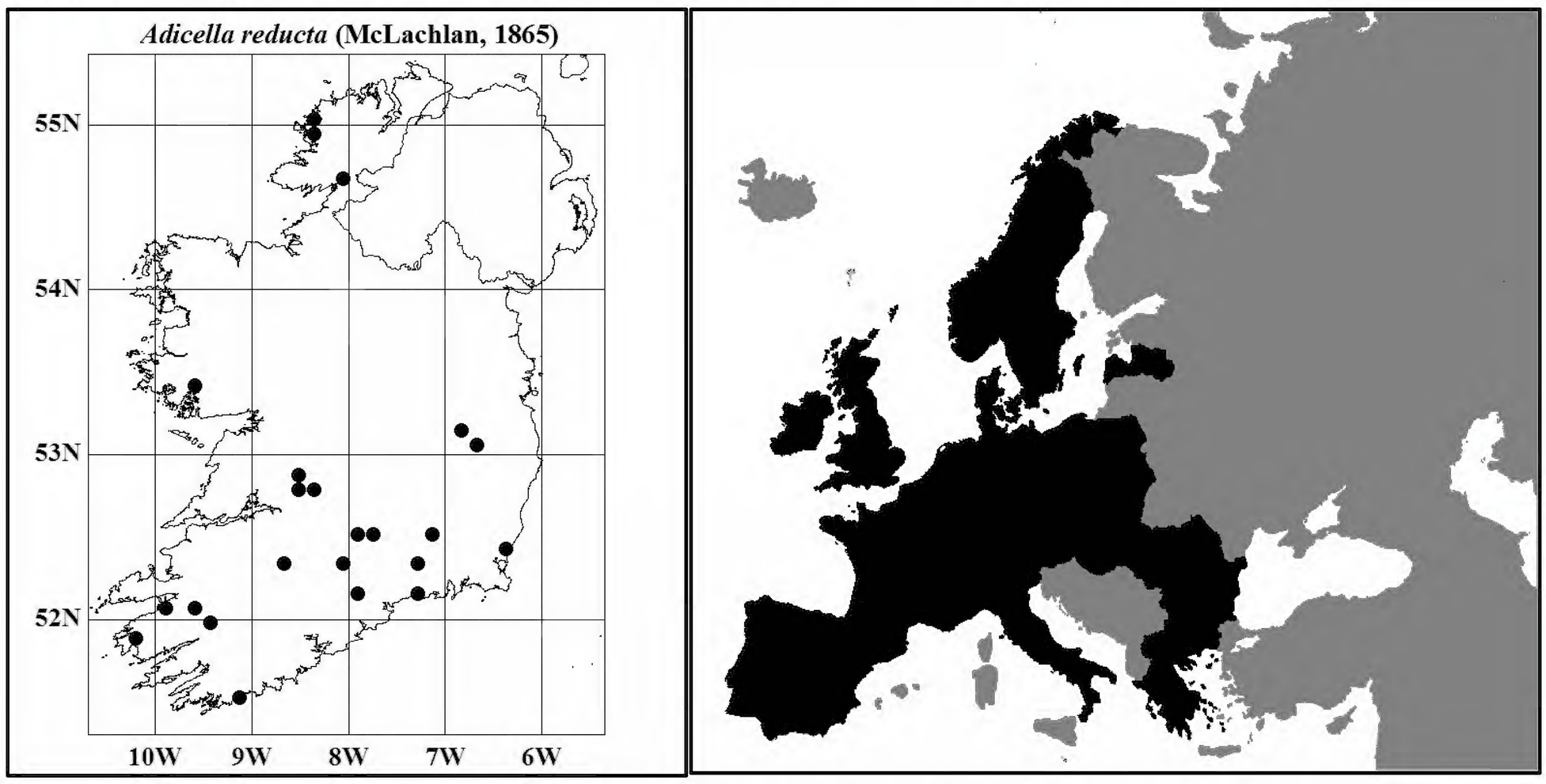
Only larval material of *Adicella filicornis* was identified from the River Liffey in County Kildare. At the time, it was not possible to accurately determine this species based on larvae.

Published record

Frost, 1942 (unsafe larval identification).]

126. *Adicella reducta* (McLachlan, 1865)

FIGURES 304-305. Known Irish and European distributions of *Adicella reducta*.



Adicella reducta is widely distributed but local in Ireland. Wallace (1991) has observed that the species is frequently overlooked in both the adult and larval stages in Britain. The cased larvae usually occur in fens, rivers and streams but there are some unconfirmed Irish records from lakes and ponds. The case is straight and composed of plant material usually roots, arranged in a spiral. The larvae are mainly shredders. The species is widespread in much of Europe.

Flight period: (April) May–September (28 May–5 September). An adult was reared on 6 April.

Counties and 10km squares: Clare, Cork, Donegal, Galway, Kerry, Kildare, Kilkenny, Tipperary, Waterford, Wexford, Wicklow (11/32). The species is known from twenty-three 10km squares (23/1019).

Published records

McLachlan, 1903 (**KERRY:** Killarney). *Anon., 1903* (**KERRY:** Killarney). *King and Halbert, 1910* (**CORK:** Glandore (W2235). **KERRY:** Killarney. **WATERFORD:** [R.] Blackwater near Lismore (X0498)). *Beirne, 1939* (doubtful record). *Praeger, 1950* (**CORK**. **KERRY**. **WATERFORD**). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**CLARE**. **CORK**. **KERRY**. **TIPPERARY**. **WATERFORD**. **WICKLOW**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 3 out of 207 river sites). *Becerra Jurado et al., 2009* (**TIPPERARY:** ponds (S0540), (S1640). **WATERFORD:** ponds (S4623), (S5202). **WEXFORD:** pond (T0830)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**DONEGAL:** Dunglow L. (B7811); L. Eske (G9783); L. Waskel (B7316). **GALWAY:** Nahalseam [L. Aphreaghaun] (L9744)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Tar (R9419), (R6019), (R9919)).

Unpublished records and voucher specimens

CLARE: stream (R6877) entering Tinarana Bay, L. Derg, ♂♂♀♀ 17 June 1976, JPOC (NMI). **KERRY: Killarney**, ♂ 12 June 1902, [JJFXK], det. RMCL, conf. JPOC (BMNH); **L. Caragh** (V7392), ♂ 5 July 1973, JPOC; **R. Cloghereen** (V9786), Blue Pool, ♂ 30 May 1973, near Blue Pool, ♂♂♀♀ 28 May 1995, JPOC; **R. Flesk** (V9689), ♂ 5 September 1972 (NMI), (V9689), ♂ 25 June 1973, JPOC; **stream** (R. Dereen, Ring of Kerry) (V4872), ♂ 26 August 1973, JPOC. **KILDARE: Newbridge (Pollardstown) Fen** (N7716), ♂ reared 6 April 1973, JPOC. **KILKENNY: waterfall near Inistioge** (S6437), 2♂♂ 10 July 2014, JPOC (NMI). **TIPPERARY: Kilmastulla R.** (R7269), (R6867), adults 1976-1977, MAOC. **WICKLOW: Brown's Beck Brook** (S9398), ♂ 25 July 1973, JPOC (NMI).

127. *Athripsodes albifrons* (Linnaeus, 1758)

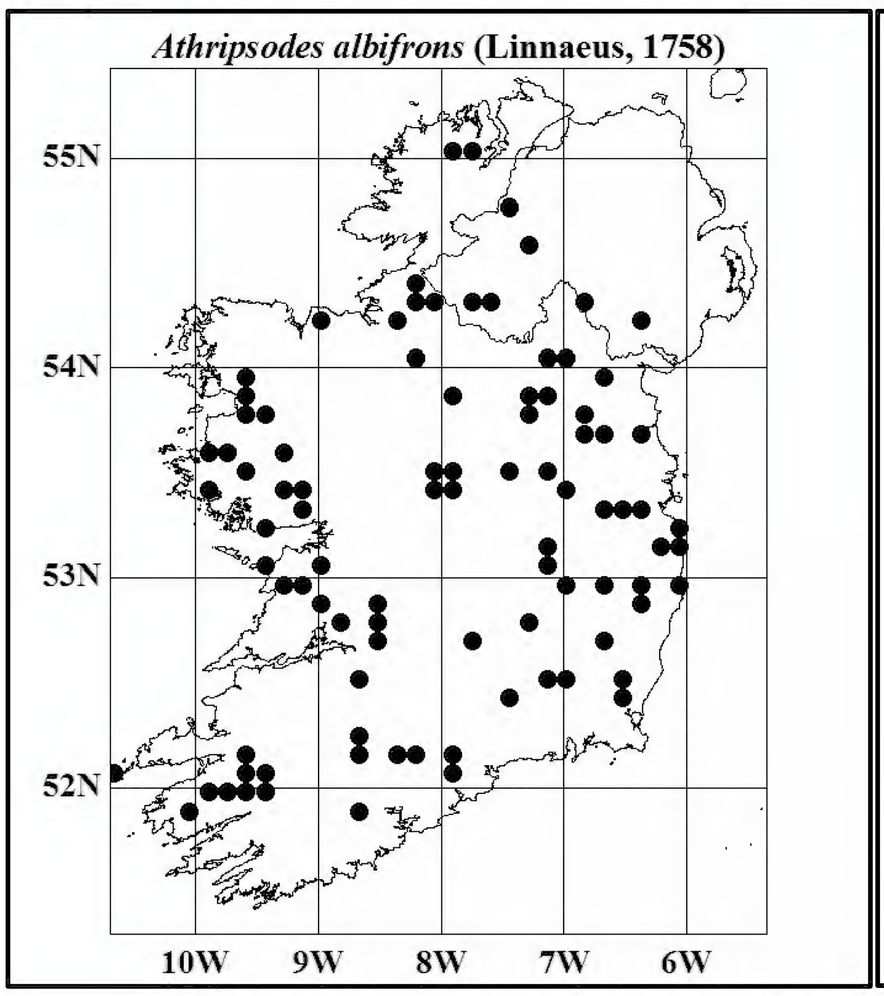
Athripsodes albifrons is a widely distributed and common Irish species. The cased larvae occur in lakes and rivers. The larvae are mainly shredders but are also gatherers and predators. The curved case is composed of sand grains. The adults often swarm in large numbers. The form *interjectus* (McLachlan, 1881) is found in Ireland. The adults of this form have jet-black wings, a feature easier to observe in recently caught dry specimens. The colour fades to a dingy brown after death (Mosely, 1939). The species is widespread in Europe.

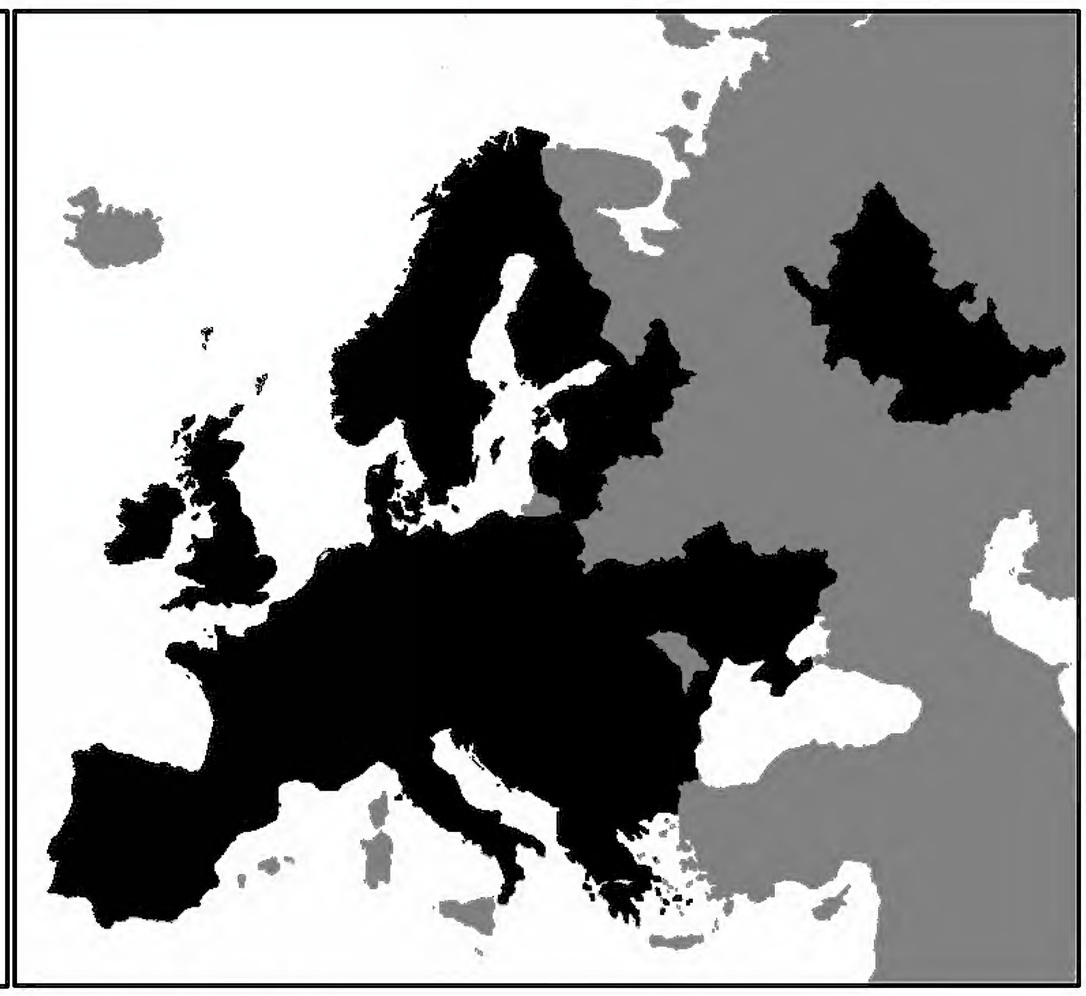
Flight period: June–September (26 June–28 September).

Counties and 10km squares: Carlow, Cavan, Clare, Cork, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Laois, Leitrim, Limerick, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (27/32). The species is known from ninety-two 10km

squares (92/1019).

FIGURES 306-307. Known Irish and European distributions of *Athripsodes albifrons*.





Published records

Morton, 1886 as *Leptocerus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King 1888a as Leptocerus* (**DUBLIN:** Lucan Demesne (O0235) [R. Liffey]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); L. Corrib (Galway) (M2829); Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Coppagh Glen (W0382); Deer Park (V9792); Denough [Deenagh] R. (V9792); Dinish (V9385); Gap of Dunloe (V8787); Ross Castle (V9488). **MAYO:** Knappabeg [Knappaghbeg] (M0080) and Mount Brown [Kinlooey] (M0381) Laoghs; Newport R. (L9994). **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]; Yew Point (N0146) [L. Ree]. **WESTMEATH:** Ballykeeron [Ballykeeran] (N0744); Coosan Point (N0446) [L. Ree]; Glasson (N0947); Hare Island (N0446) [L. Ree]). *Turner, 1903* as *Leptocerus* (**KILKENNY:** Woodstock, Inistioge (S6437)). *King and Halbert, 1910* as *Leptocerus* (**CORK:** Mallow (W5598) [R. Blackwater]. **DONEGAL:** Lennan Bridge (C1621) [Leannan R.]. **DUBLIN:** Lucan Demesne (O0235) [R. Liffey]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); L. Corrib (M2829); Maam (L9653). **KERRY:** Coppagh Glen (W0382); Deenagh R. (V9792); Deer Park (V9792); Dinish (V9385); Gap of Dunloe (V8787); Ross Castle (V9488). **MAYO:** Knappabeg [Knappaghbeg] (M0080) and Mount Brown [Kinlooey] (M0381) Loughs; Newport R. (L9994). **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]; Yew Point (N0146) [L. Ree]. **WATERFORD:** Cappoquin (X0999); Dromana (X0994). **WESTMEATH:** Ballykeeran (N0744); Coosan Point (N0446) [L. Ree]; Hare Island (N0446) [L. Ree]; Waterstown (N0946)). *Halbert, 1912* as *Leptocerus* (**MAYO:** Newport (L9893); Westport (L9984)). *Mosely, 1927* as *Leptocerus interjectus* and *L.*

albifrons (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Leptocerus interjectus* and *L. albifrons* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Leptocerus* (**GALWAY:** Cashel Bay (L7942); Inverin (M0822); Oughterard (M1343)). *Mosely, 1930* as *Leptocerus interjectus* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Mosely, 1939* as *Leptocerus interjectus* (**GALWAY**). *Beirne, 1939* as *Leptocerus* (**CORK:** Ballyhooly (W7298) [R. Blackwater]. **KERRY:** Flesk, Killarney (V9689)). *Beirne, 1941* as *Leptocerus* (**KERRY:** Flesk, Killarney (V9689)). *Frost, 1942* as *Leptocerus* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Beirne and Harris, 1946* as *Leptocerus* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Hickin, 1967* (**GALWAY** (var. *interjectus*)). *Speight, 1977* as *Leptocerus* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [should be Coosan Point (N0446)]; Hare Island (N0446)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488) as *Athripsodes albifrons*/*A. bilineatus*)). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7186)). *Wallace, 1981* (**CLARE**. **KERRY**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V1991), (V9290); Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** also on lake-shores). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 5 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** also on lake-shores). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890); R. Laune (V8991)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 3 out of 207 river sites). *Atalah et al., 2010* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**CAVAN:** L. Sheelin (N4385). **SLIGO:** L. Gill (G7534)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686); Muckross Lake (V9485); R. Flesk (V9789); R. Inny (V5572)). *O'Connor and Davy-Bowker, 2014* (**DOWN:** Newry R. (J0730). **FERMANAGH:** R. Arney (H1737); R. Black (H0143). **TYRONE:** R. Camowen (H4673); R. Strule (H4186)). *Baars et al., 2014* (**IRELAND:** recorded in 1 of 12 upland peatland lakes). *Anon., 2015a* (**CLARE:** L. Bunny (R3796)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Arney R. (H2336)).

Unpublished records and voucher specimens

CARLOW: Kilcarry (S8962) [R. Barrow], ♂♀ 6 August 1929, AWS, det. JPOC (NMI); **R. Barrow** (S7237), St Mullins, LTS ♂22 July 2015, JPOC/MAOC, det. JPOC, (S7043), Tinnahinch, dead inside a light-fitting on a bridge, ♂ 21 August 1996, JPOC; **R. Slaney** (S9161), Clonegal, adult 31 August 1946, JRH. **CAVAN: L. Ramor** (N5987), Virginia, ♂ 10 August 1972, JPOC; **L. Sheelin**, adult 30 August 1945, JRH, (N4786), ♂ 5 August 1973, JPOC; **R. Annalee** (H6810), 15♂♂ 1 September 1972, JPOC; **R. Laragh** (H5210), LT 2♂♂ 2-3 August 1973, JPOC. **CLARE: Lickeen Lake** (R1691), 2♂♂ 31 August 1973, JPOC; **L. Atedaun** (R2989), ♂ 1 September 1973, JPOC; **L. Derg** (R6979), LT 4♂♂ 2-3 September 1973, JPOC,

(R6876), north of Killaloe, 6♀♀ 6 August 1986, CM/OSF (SINMNH); **Poulsallagh** (M0801), Lisdoonvarna, light adult 15 August 1969, ECPC (per IDW); **R. Denlagh** (R1191), 2♂♂ 30 August 1973, JPOC; **R. Fergus** (R2688), below L. Inchiquin, 5♂♂ 1 September 1973, (R3480), ♂ 11 July 1973, JPOC; **Sixmilebridge** (R4767) [Rally R.], north of, 10♂♂13♀♀ 6 August 1986, CM/OSF (SINMNH). **CORK: Ballyhooly** (W7298) [R. Blackwater], adult 12 August 1938, BPB (BMNH); **Buttevant** (R5408) [R. Awbeg], MVLT ♂ 17 August 1995, KGMB; **Mallow** (W5598) [R. Blackwater], ♂♀, conf. JPOC (NMI); **R. Araglin Catchment** (R8702), larvae, PSG (pers. comm.); **R. Blackwater** (W5397), west of Mallow, 12♂♂10♀♀ 4 August 1986, CM/OSF (SINMNH); **R. Lee** (W5671), adults June-September, MK. **DONEGAL: Glenveagh National Park** (C0423), RLT 2♂♂ 6 August 1982, COK, det. JPOC (NMI), MVLT ♂ 11 August 1984, KGMB, det. JPOC. **DUBLIN: Lucan** (O0335) [R. Liffey], ♂♂ 28-29 August 1888, JJFXK (NMS), 2♂♂ 10 September 1893, JNH, conf. JPOC (NMI); **R. Dodder** (O1328), Templeogue, adult 18 August 1947, JRH; **R. Griffeen** (O0333), Lucan, adult 7 August 1946, JRH; **R. Liffey** (O0635), weir at Wren's Nest, ♀ 12 August 2014, JPOC, (O0735), Strawberry Beds, ♀ 12 August 2014, JPOC; **Shanganagh R.** (O2523), Killiney, adult 13 August 1946, JRH. **GALWAY: Inverin** (M0822), adults 17 July-2 August 1926, MEM (including var. *interjectus*) (BMNH); **Leenane** [Leenaun] (L8762), Connemara, adult 30 August 1930, MEM (var. *interjectus*) (BMNH); **L. Corrib** (M1745), adults June-September 1964, MK, Oughterard (M1343), 8♂♂♀ 10 August 1981, HM, det. H. Malicky, (M2531), Hurney's Point [near Moycullen], MVLT ♂ 28 August 2003, KGMB, det. JPOC, (M2642), Keekill, MVLT ♀ 2 August 2003, KGMB, det. JPOC; **L. Pollacappal** (L7458), Kylemore Abbey, 3♂♂ 25 July 1982, JPOC (NMI); **Ma'am** [Maam] (L9653), ♂, JJFXK, conf. JPOC (NMI); **Oughterard** (M1343), adults 3-9 August 1926, MEM (including var. *interjectus*) (BMNH). **KERRY: Iveragh Peninsula** (V7184), near west Glencar, ♂♀ 18 August 1981, HM, det. H. Malicky; **Killarney**, adult 28 June 1887, [JJFXK] (BMNH), ♂ 12 July & ♀ 21 July 1887, JJFXK, conf. JPOC (NMI), adult 1940, BPB, det. JRH; **Killarney Lakes**, trout stomachs, 3 larvae, UCD, det. JPOC; **L. Leane** (V9686), boat house, ♂♀ 5 September 1972, 2♂♂ 23 August 1973, (V9291), Golf Course, 3♂♂ 24 August 1973, (V9291), Hotel Europe, 7♂♂ 5 September 1972, JPOC (NMI), (V9389), Library Point, 3 pupae July 1977, ANS, det. JPOC; **Muckross** (V9786), adult 18 August 1877, AEE (variety) (BMNH); **Muckross Lake** (V9685), Goleen, larvae, June 1974, IDW; **R. Caragh** (V7184), ♂ 3 July 1973, JPOC; **R. Cummeragh** (V5872), larva 6 July & 5♂♂ 26 August 1973, JPOC; **R. Flesk** (V9689), adult 3 August 1939, BPB (BMNH), adult 3 August 1937, BPB (variety) (BMNH), (V9890), White Bridge, LT 6♂♂ 27 July 1977, MFOG; **R. Laune** (V8991), 11♂♂♀ 24 August 1973 (NMI), exiting Lower Lake, 2♂♂ 5 September 1972, JPOC; **R. Maine** (Q8905), 2♂♂ 7 July 1973, JPOC; **stream** (Q8905), entering R. Maine, ♂ 7 July 1973, JPOC. **KILDARE: R. Barrow** (S6892), near Athy, 10 larvae 7 July 2013, PS; **Rye Water** (O0036), adult 10 August 1946,

JRH. **KILKENNY: R. Nore** (S4472), larvae 16 August 2004, PS, (S4470), Ballyragget, larvae 16 August 2004, PS, (S6337), Inistioge, ♂ 21 July 2015, JPOC/MAOC, det. JPOC. **LAOIS: R. Barrow** (N6210), below Monestrevan, ♂ 3 August 1986, JPOC, (N6301), Dunrally Bridge, ♂ 3 August 1986, CM/OSF (SINMNH). **LEITRIM: Bonet R.** (G8444), larvae 25 June 1991, (G8446), larvae 25 June 1991, (G8741), larvae 25 June 1991, DAG/JML, det. JML; **L. Bofin** (N0489), dredge larva 20 July 1972, AFF, det. JPOC. **LIMERICK: R. Maigue** (R5140), Croom, adult 2 September 1948, JRH; **R. Shannon** (R6663), Castleconnell, ♂♀ 3 August 1988, JPOC (NMI). **MAYO: L. Feeagh** (F9700), larvae 1996/1997, JW; **L. Mask** (M1259), (M1465), adults June-September 1964, MK; **Westport** (L9984), 3♂♂, JJFXK, conf. JPOC (NMI). **MEATH: Kells Blackwater R.** (N8172), larva 8 July 1972, AFF, det. JPOC; **R. Blackwater** (N7245), Longwood, adult 14 August 1947, JRH, (N7377), west of Kells, ♀ 1 August 1986, CM/OSF (SINMNH); **R. Boyne** (N9271), Stackallen, adult 6 September 1946, JRH, (O0575), Obelisk, Oldbridge, adult 2 August 1948, JRH. **MONAGHAN: Monalty Lake** (H8602), Carrickmacross, ♂ 3 August 1980, KGMB, det. JPOC (NMI). **OFFALY: Little Brosna** (N6050), Birr, ♂ 8 September 1978, JPOC. **ROSCOMMON: Athlone** (N0342), R. Shannon, adult 20 August 1958, PHW (BMNH); **L. Key** (G8207), 4 larvae 17 July 1972, AFF, det. JPOC; **L. Ree** (N0245), Yellow Island, adults 22 August 1958, PHW (BMNH). **SLIGO: R. Easky** (G4032), near Patch, ♂♀ 24 August 1992, JPOC. **TIPPERARY: Brownstown R.** (S1665), larvae 6 July 1992, DAG/JML, det. JML; **Kilmastulla R.** (R6867), larvae/adults 1976-1977, MAOC; **R. Lingaun** (S4031), Slate Quarries, ♂ 21 August 2000, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 28 June 1888, JJFXK (NMS); **L. Ennell** (N4146), adults June-September 1964, MK, adult 28 September 1946, JRH; **L. Ree** (N0245), Carby [Carberry] Island, adult 18 August 1958, PHW (BMNH); **R. Shannon** (N0440), dredge larva 13 July 1972, AFF, det. JPOC. **WEXFORD: R. Boro** (S9636), Soldiers Hole, ♀ 23 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9739), Enniscorthy, 3♂♂5♀♀ 27 July 2015, (S9738), 3♂♂3♀♀ 28 July 2015, all JPOC/MAOC, det. JPOC (NMI). **WICKLOW: Glen of the Downs** (O2611), adult 15 July 1935, BPB (variety) (BMNH); **Little Bray R.** (O2518), Little Bray, ♂♀ 31 July 1986, CM/OSF (SINMNH); **Lower Lake, Glendalough** (T1196), ♂ 21 July 1973, JPOC; **R. Bray** (O2518), 7♂♂ 24 August 1973, JPOC; **R. Dargle** (O2216), 15♂♂2♀♀ 16 August 1972, JPOC; **R. Ow** (T0981), 6♂♂ 28 July 1973, JPOC; **R. Slaney** (S8892), LT 7♂♂ 24-25 July 1973, JPOC; **Vartry R.** (T2797), ♂ 20 July 1973, JPOC (NMI).

128. *Athripsodes aterrimus* (Stephens, 1836)

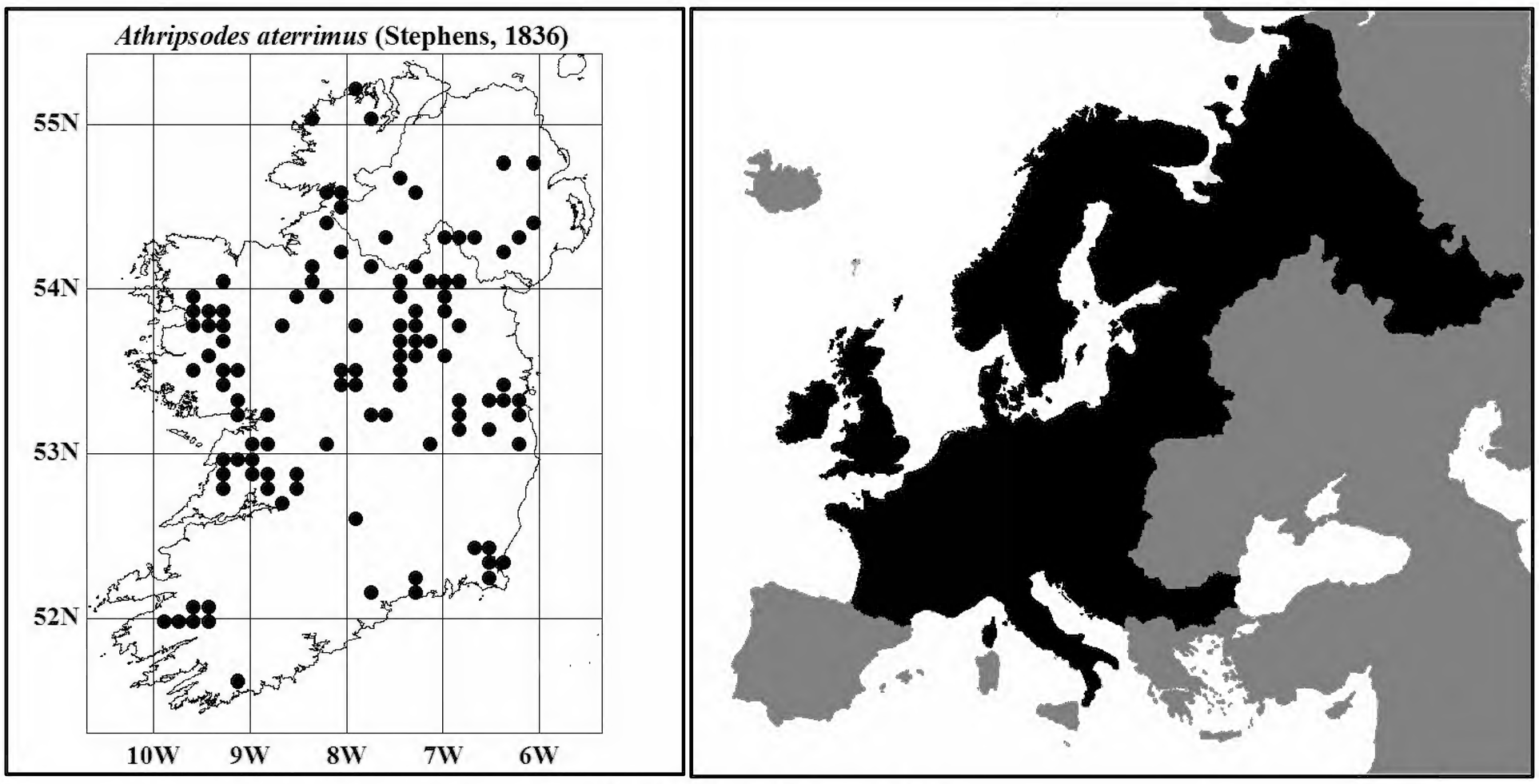
Athripsodes aterrimus is a widely distributed and common Irish species. The cased larvae occur in canals, lakes, ponds, reservoirs, rivers and streams. The larvae are mainly shredders but are also gatherers and predators. The curved case is composed of

sand grains. The adults often swarm in large numbers at dusk. The species is widespread in much of Europe.

Flight period: June–September (3 June–23 September) (November). An adult was also taken on 9 November.

Counties and 10km squares: Antrim, Armagh, Cavan, Clare, Cork, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Laois, Leitrim, Longford, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (27/32). The species is known from 110 10km squares (110/1019).

FIGURES 308-309. Known Irish and European distributions of *Athripsodes aterrimus*.



Published records

Morton, 1883 as *Leptocerus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a as Leptocerus* (**ARMAGH:** Armagh (H8745). **KERRY:** Ardagh Laogh (V9888); Coppagh Glen (W0382); Ross Castle (V9488). **MAYO:** Aille (M0780), Ballin (L9987), Bleachyard (L9994), Carrowbeg (L9295), Cushinsheen (M0482), Doogan (M0094), Knappabeg [Knappaghbeg], Knappagh (M0080) [Knappaghbeg] and Prospect (L9581) Laoghs; Carrowbeg (M0084) and Newport (L9994) Rivers. **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]; Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Shannon (N0341); Twy Laogh (N1043); Wineport (N0746) [L. Ree]). *King and Halbert, 1910* as *Leptocerus* (**ARMAGH:** Lowry's L. (H9144) near Armagh. **DONEGAL:** Kilmacrennan district (C1420) [Leannan R.]. **KERRY:** Ardagh L. (V9888); Coppagh Glen (W0382); Muckross (V9786); Ross Castle (V9488). **MAYO:** Newport (L9893) and Westport (L9984) districts. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]; Yew Point (N0146) [L. Ree]. **WATERFORD:** Cappagh L. (X1996). **WESTMEATH:** Coosan (N0446) [L. Ree]; Shannon (N0341); Twy L. (N1043); Wineport (N0746) [L. Ree]. **WEXFORD:** Edenvale (T0427) [R. Sow];

Johnstown Castle (T0216) [small lakes]; Rosslare [Rosslare Strand] (T0718)). *Halbert, 1912* as *Leptocerus* (**MAYO:** Newport (L9893); Westport (L9984)). *Mosely, 1930* as *Leptocerus* (**GALWAY:** Oughterard (M1343)). *Beirne, 1939* as *Leptocerus* (**DUBLIN:** Finglas (O1337) [R. Tolka]; Kil o' the Grange [Kill of the Grange] (O2226) [Carrickbrennan or Monkstown Stream]). *Moriarty, 1972a* (**GALWAY:** L. Corrib (M1244), (M1445)). *Moriarty, 1973a* (**GALWAY:** L. Corrib (M0050), (M1040) = [M1249]. **ROSCOMMON:** L. Key (G8000) = [G8304]). *Moriarty, 1974* (**ROSCOMMON:** L. Key (G8304)). *O'Connor and Norton, 1977* (**WESTMEATH:** Hare Island, L. Ree (N0446); L. Coosan (N0544)). *McCarthy, 1977* (**MEATH:** Trimblestown R. (N7262)). *Speight, 1977* as *Leptocerus* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan] (N0446)). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**WICKLOW:** L. Dan (O1502), adults). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881), (V7186)). *Wallace, 1981* (**CAVAN**. **KERRY**. **WICKLOW**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 8 out of 70 sampled sites). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 8 out of 207 river sites). *Millane, 2006* (**MAYO:** L. Carra (M1673)). *Atalah et al., 2010* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**CLARE:** L. Bunny (R3796); L. Cullaunyheeda (R4774); Muckanagh L. (R3792). **DONEGAL:** L. Anure (B8216); L. Golagh (G9665). **LEITRIM:** L. Melvin (G8852). **MEATH:** L. Bane (N5571). **ROSCOMMON:** L. O'Flynn (M5879). **WESTMEATH:** L. Derravaragh (N4066)). *O'Connor, 2013b* (**KERRY:** L. Leane (V9686); Muckross Lake (V9485)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** R. Main (J0889); Six Mile Water (J2890). **DOWN:** Newry R. (J0730); R. Lagan (J2551); Upper Bann (J1345). **FERMANAGH:** R. Finn (H4220). **TYRONE:** Fairywater (H3976); R. Camowen (H4673)). *Baars et al., 2014* (**IRELAND:** recorded in 1 of 12 upland peatland lakes). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Mill L. (H2438)). *Anon., 2015a* (**MAYO:** Clonbur Woodland (M1455); L. Mask (M0957). **OFFALY:** Silver R. (N1319)).

Unpublished records and voucher specimens

WEST IRELAND: adult 1886, JJFXK (BMNH).

ARMAGH: Armagh (H8745), 2♂♂ 29 July 1889, WFJ, conf. JPOC (NMI); **Lowry's L.** (H9144), ♂ 9 July 1891, WFJ, conf. JPOC (NMI). **CAVAN: Corrakane L.** (H4000), small lake, 57♂♂12♀♀ 16 June 1973, JPOC; **L. Brackley** (H1921), 7♂♂12♀♀ 4 August 1973, JPOC; **L. Coragh** (H6114), Cootehill, adult 11 July 1965, JRH; **L. Cuilcagh** (N6389), 10♂♂ 10 August 1972, larva sheltered rocky shore & larva exposed rocky shore, 29 March 1973, 3♂♂ 31 August 1986, JPOC, 8♂♂2♀♀ 1

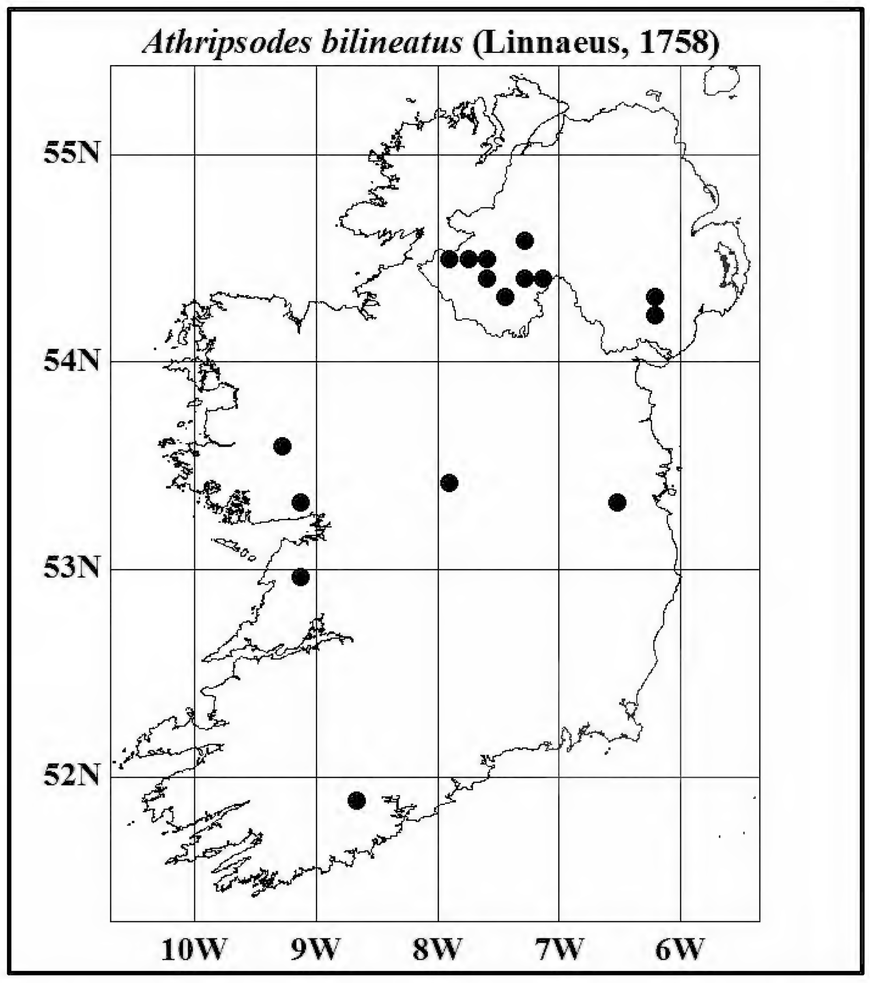
August 1986, CM/OSF (SINMNH); **L. Inchin** (H3808), ♂♂♀ 28 June 1975, JPOC; **L. Moneen** (G9828), 4♂♂ 3 August 1973, JPOC; **L. Mullagh** (N6785), 20♂♂4♀♀ 1 August 1973, JPOC, larvae 1996/1997, JW; **L. Sheelin**, adult 11 August 1947, JRH, (N4785), Mount Nugent, ♀ 1 August 1986, CM/OSF (SINMNH), ♂2♀♀ 8 July 1975, MFOG, det. JPOC, (N4786), 4♂♂ 5 August 1973, (N4182), LT ♂ 22-23 September 1973, (N4285), Kilnahard, 3♂♂ 1 August 1986, JPOC, IETS 1973/1974: (N4384), Kilnahard Bay, 2 adults, PG, (N4783), east shore, Tonagh, 2♂♂ 30 July 2012, MG; **Moyduff Lake** (H6909), 2♂♂ 10 August 1973, JPOC; **pond** (Drunad L.) (H7102), ♂ 1 August 1973, JPOC. **CLARE: Cratloe Woods** (R5060), ♂ 5 June 1992, JPOC; **Doolough** (R1171), ♀ 9 July 1973, JPOC; **Lickeen L.** (R1690), ♂♂♀♀ 11 August 2003, JPOC, (R1891), 7♂♂16♀♀ 10 July 1973, (R1691), ♂ 3 August 1973, JPOC; **Lickeen Pond** (R1891), ♂2♀♀ 10 July 1973, JPOC; **L. Derg** (R6878), Tinarana Bay, ♂♂♀♀ 13 July 1973 (NMI), ♂ 17 June 1976 (NMI), JPOC; **L. Inchiquin** (R2789), ♂♂ 9 August 2003, JPOC (NMI), larvae 1996/1997, JW; **L. Mooghna** (R1384), 6♂♂ 9 July 1973, JPOC; **O'Brien's Big Lake** (R4082), ♂ 11 July 1973, JPOC; **R. Fergus** (R2888), Corofin, adult 17 July 1946, JRH, (R3480), Ennis, 20♂♂4♀♀ 11 July 1973, JPOC. **CORK: Ballinlough** (W1938), near Leap, ♂♂ 12 August 1999, PA, det. JPOC. **DONEGAL: Coolmore** (G8566), ♂ 9 November 1893 (misidentified as *Athripsodes* (now *Ceraclea*) *senilis*), WFJ, det. JPOC (NMI); **Coxtown** (G9271), lake near, ♂♂ 26 June 1981, JPOC; **Sessiah Lake** (C0436), Portnablagh, 4♂♂2♀♀ 6 June 1980, JMCH, det. JPOC. **DUBLIN: Farmleigh Park** (O0936), ♂ 17 June 2015, JPOC; **Finglas** (O1337) [R. Tolka], adults 28 July 1938, BPB (BMNH); **Hazelhatch** (N9831) [Grand Canal], ♂ 28 June 1977, MDCW, det. JPOC; **Kill of the Grange** (O2226) [Carrickbrennan/Monkstown Stream], adults 18 July 1938, BPB (BMNH); **Lucan** (O0335) [R. Liffey], ♂ 28 August & ♂ 29 August 1888, JJFXK, conf. JPOC (NMS); **Marlay Park** (O1526), ♂ reared 6 July & ♂ July 1987, MK, det. JPOC; **Phoenix Park** (O1036), Quarry Pond, ♂♀ 14 June 1972, JPOC; **R. Dodder** (O1730), Clonskeagh, adult 21 June 1945, JRH. **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva 3 May 1984, PB, det. JPOC; **Hackett L.** (west side) (M3049), Lisdonagh, MT ♂ 12-26 June 2014, JC, det MG; **L. Corrib** (M1745), adults June-August, 1964, MK, (M2531), Lower, ♂ 17 June 1980, BC, conf. JPOC (NMI), Oughterard (M1343), 8♂♂♀ 10 August 1981, HM, det. H. Malicky; **L. Cutra** (R4698), MVLT ♂ 23 June 1996, KGMB, det. JPOC; **Oughterard** (M1343), adults 3-9 August 1926, MEM (BMNH); **R. Corrib** (M2925), Nun's Island, ♂ 7 August 1980, DMG, det. JPOC. **KERRY: Gap of Dunloe** (V8787), lakes, ♂♂♀♀ 10 July 1986, JPOC; **Killarney**, adults 8 July 1887, [JJFXK] (BMNH), 2♂♂ 24 June 1887, JJFXK, conf. JPOC (NMI); **L. Looscaunagh** (V8879), 3♂♂ 4 August 1986, CM/OSF (SINMNH); **Muckross** (V9786), ♂, conf. JPOC (NMI); **Muckross Lake** (V9685), Dundag Bay, IET ♂ 10 July 1972, JPOC; **pond** (V9080), 10♂♂2♀♀ 4 July 1973, JPOC. **KILDARE: canal at Milltown** (N7617), 6♂♂2♀♀ 3 August 1986, CM/OSF (SINMNH), JPOC; **Donadea Forest Park** (N8332), lake, ♂ 14 June 1987, JPOC;

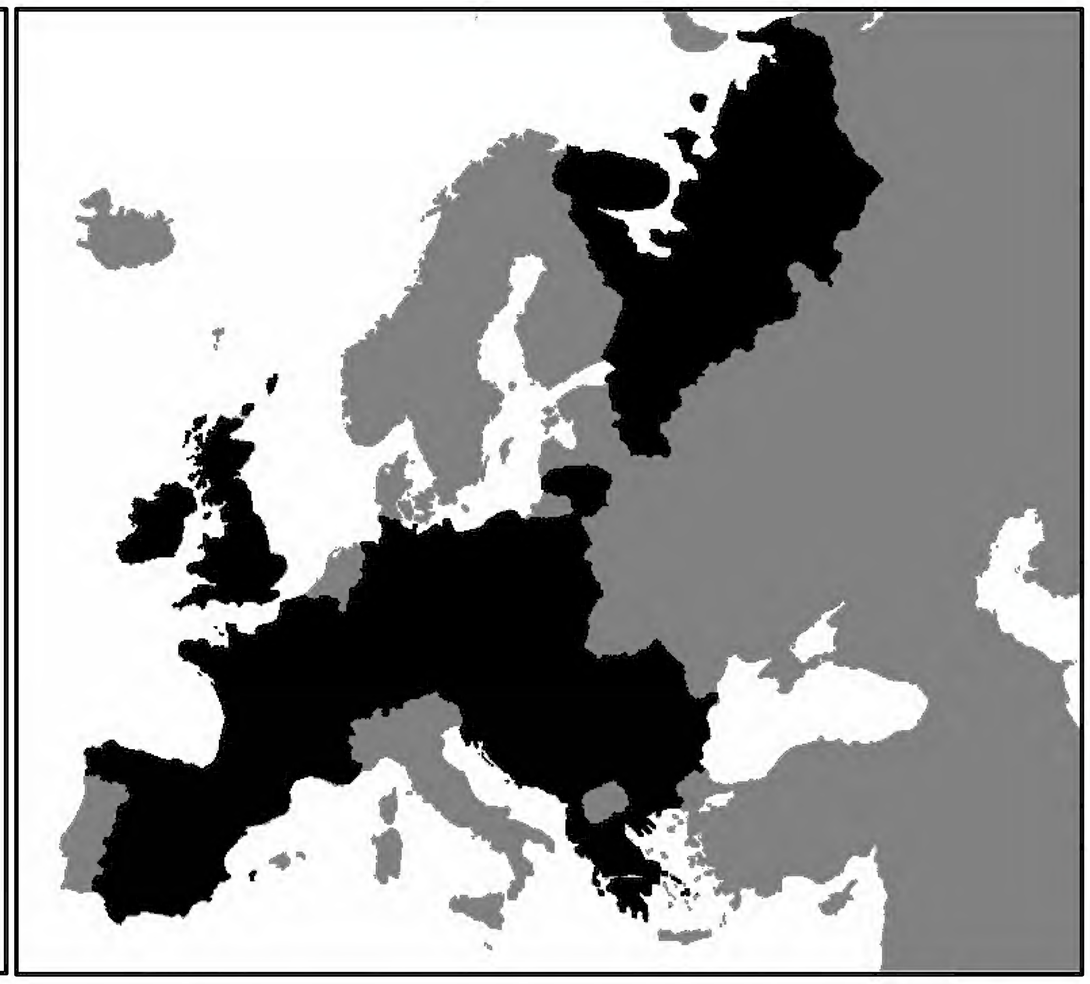
Newbridge (Pollardstown) Fen (N7716), canal bank, ♂♂ 9 June 1984, JPOC/MAOC, det. JPOC (NMI). **LAOIS: The Derries** (N5805), small lake, ♂♂ 11 June 1983, JPOC/MAOC (NMI). **LONGFORD: R. Shannon** (N0684), north of L. Forbes, 5♂♂ 16 July 1978, JPOC. **MAYO: Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults June-August 1964, MK; **L. Carra**, adults June-August 1964, MK, (M1677), Castleburke, ♂♂ 28 June 2001, JPOC (NMI), (M1673), Partry, ♂♂♀♀ 27 June 2001, JPOC; **L. Conn** (G1516), adults June-August 1964, MK; **L. Feenagh** (L9699), June-August 1964, MK; **Westport** (L9984), 7♂♂, JJFXK, conf. JPOC (NMI). **MEATH: Kells Blackwater R.** (N7377), 2♂♂ 1 August 1986, JPOC; **R. Blackwater** (N7377), west of Kells, 2♂♂ 1 August 1986, CM/OSF (SINMNH). **MONAGHAN: Emyvale** (H6843), ♂♂♀♀, KJM (NMS); **Glaslough** (H7241), ♂ 12 August 1973, JPOC; **L. Moylemuck** (H6415), ♂ 27 July 1972, JPOC (NMI); **L. Shantonagh** (H7511), adult, JRH. **OFFALY: Pallas Lake** (N2719), adults June-August, MK, 18 August 1965, JRH. **ROSCOMMON: Athlone** (N0243), R. Shannon, adults 20 August 1958, PHW, det. DEK (BMNH); **L. Key** (G8404), Rockingham Estate, ♂ 11 August 2001, JPOC; **L. O'Flynn** (M5878), 5♂♂ 16 August 2001, JPOC. **SLIGO: L. Arrow** (G7711), adults June-August 1964, MK; **L. Bo** (G7918), adults June-August 1964, MK; **L. Gara South** (M6997), larva 1996/1997, JW. **TIPPERARY: Gortmore** (M8500) [L. Derg], ♂ 18 June 1986, KGMB, det. JPOC (NMI); **Holycross** (S0854) [R. Suir], ♀♀ 22 June 1984, P. A. Byrne, det. KGMB; **Kilmastulla R.** (R6867), larvae/adults 1976-1977, MAOC. **WATERFORD: Annestown R. Valley Reserve** (S5000), ♂ 8 July 2014, JPOC, small outflow stream from pond, 2 larvae 8 July 2014, MAOC/HOC, det. JPOC (NMI); **Ballin L.** (S4503), near Kill, 9♂♂3♀♀ 19 July 1987, JPOC; **Ballyscanlan L.** (S5403), ♂ 8 July 2014, JPOC/MAOC, det. JPOC; **Knockaderry Reservoir** (S4906), ♀ 19 July 1987, JPOC. **WESTMEATH: Athlone**, adults 28 July 1888, [JJFXK] (BMNH), 4♂♂ 29 June, ♂ 3 July, ♂ 6 July & ♂ 13a July, 2♂♂ 1a August 1888, JJFXK, conf. JPOC (NMI), ♂ 28 June 1888, JJFXK, conf. JPOC (NMS), adults 20 August 1958, PHW (BMNH); **Ballynafid Lake** (N4160), 2♂♂ 22 June 1989, JPOC; **L. Derravaragh**, adults June-August 1964, MK, IETS 1973/1974: (N4169), Coolure Bay, 2 adults, (N4663), between Clinton's Bay/Crooked Wood, adult, (N4168), near Derrya, adult, PG; **L. Ennell** (N4046), Tudenham, 4♂♂ 9 July 1997, JPOC; **L. Lene** (N5067), larvae 1996/1997, JW, ♂♂ 11 August 1998, JPOC (NMI); **L. Owel**, adults June-August, 1964, MK, (N4156), IET ♂ 25 August 1971, IFT, det. JPOC (NMI), (N4156), near Beach Hill, IETS 1973/1974 3 adults, PG, larvae 1996/1997, JW, (N4056), Tullaghan shore, adult, (N3859), near Wattstown, 7 adults, PG; **L. Ree**, adult, JRH, (N0446), Hare Island, 2♂♂ 19 June 1976, JPOC; **White Lake** (N5172), near Castlepollard, 2 larvae from *Chara* bed 1981, COK, det. JPOC (NMI), (N3944), Robin's own shore, adult 3 August 1967, JRH. **WEXFORD: angling ponds near Kellystown** (S8930), 21♂♂3♀♀ 6 July 2014, JPOC/MAOC, det. JPOC; **Johnstown Castle** (T0216), lake, ♂♂♀♀ 8 June 1986, JPOC; **near Bridgetown** (S9810), ♂♂ 3 June & ♂ 4 June 1987,

JPOC; **near Whitestown** (T0517), ponds, ♂ 9 June 1978, JPOC/MAOC, det. JPOC; **Wexford**, ♂ 14 July 1902, JJFXK, conf. JPOC (NMI). **WICKLOW: L. Dan** (O1502), 2♂♂ 24 August 1972, JPOC; **Poulaphucha (Blessington) Reservoir** (N9610), adult 29 June 1947, JRH.

129. *Athripsodes bilineatus* (Linnaeus, 1758)

FIGURES 310-311. Known Irish and European distributions of *Athripsodes bilineatus*.





Athripsodes bilineatus is a local and mysterious species in Ireland. It appears to be easier to find as a larva rather than as an adult. The author has never found the adult but there are correctly identified King specimens from 1888. The males of *A. albifrons* and *A. bilineatus* are very similar and best separated by the black hairs on the head of the latter. The females are much easier to identify due to differences in the shape of the genitalia. Waringer and Graf (2011) mention that the adults swarm in zigzag movements in the middle of rivers and streams. Perhaps, this behaviour makes them less vulnerable to capture with a net from a bank. Most Irish records are based on the cased larvae which occur in lakes and rivers. The larvae are mainly shredders but are also gatherers and predators. The curved case is composed of sand grains. The species is widespread in Europe but with a disjointed range.

Flight period: July (two are dated 30 July). There are only a small number of Irish adult records. Barnard and Ross (2012) give the British flight period as May–August (September).

Counties and 10km squares: Clare, Cork, Down, Dublin, Fermanagh, Galway, Mayo, Tyrone, Westmeath (9/32). The species is known from sixteen 10km squares (16/1019).

Published records

King, 1888a as *Leptocerus* (**DUBLIN:** Lucan (O0335) [R. Liffey]). **WESTMEATH:**

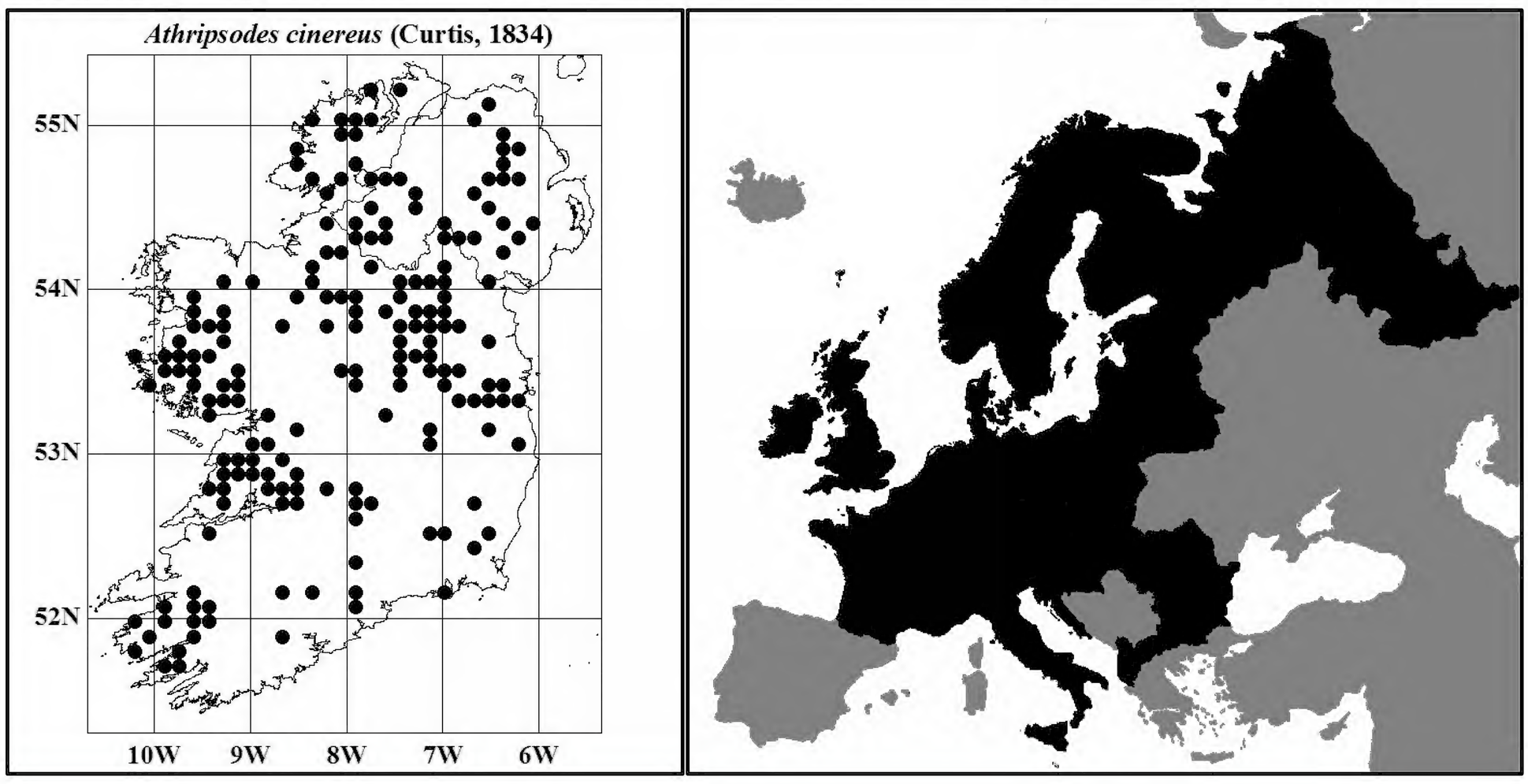
Shannon (N0341)). *Halbert, 1908* as *Leptocerus* (**DUBLIN:** Lucan (O0335)). *King and Halbert, 1910* as *Leptocerus* (**DUBLIN:** Lucan (O0335) [R. Liffey]. **WESTMEATH:** Shannon (N0341)). *Frost, 1939* as *Leptocerus* (unsafe larval identification). *Frost, 1942* as *Leptocerus* (unsafe larval identification). *Fahy, 1972a* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1975* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1987* (**WESTMEATH**). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** rare). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 8 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** rare). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 11 out of 207 river sites). *Atalah et al., 2010* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and Davy-Bowker, 2014* (**DOWN:** Upper Bann (J1345), (J2129). **FERMANAGH:** Foxhill Burn (H2752); Lisnabane Burn (H3744); R. Ballinamallard (H2853); R. Bannagh (H1665); R. Glendurragh (H2265); R. Termon (H1165). **TYRONE:** Ballynahatty Water (R. Owenreagh) (H4367); Fury R. (H5551); R. Cleen (H4748)).

Unpublished records and voucher specimens

CLARE: L. Inchiquin (R2789), larva 1996/1997, JW. **CORK: R. Lee** (W5671), adult July, MK. **GALWAY: L. Corrib** (M2930), Angliham, larva 12 July 1982, (M2531), Hurnies, larva 17 May 1983, DOK, conf. JPOC. **MAYO: L. Mask** (M1259), (M1465), adults July 1964, MK. **WESTMEATH: Athlone** (N0341) [R. Shannon], 2♂♂ 30a July 1888, JJFXK, conf. JPOC (NMI), adult July 1888, [JJFXK], per IDW (NMW), adult 1888, JJFXK (TMM) (per IDW).

130. *Athripsodes cinereus* (Curtis, 1834)

FIGURES 312-313. Known Irish and European distributions of *Athripsodes cinereus*.



Athripsodes cinereus is a widely distributed and common Irish species. The cased larvae occur in canals, lakes, reservoirs, rivers and streams. The larvae are omnivores and the curved case is composed of sand grains. The species is widespread in much of Europe.

Flight period: June–November (1 June–9 November).

Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry, Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Laois, Leitrim, Limerick, Longford, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (31/32). The species is known from 182 10km squares (182/1019).

Published records

Morton, 1883 as *Leptocerus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King 1888a as Leptocerus* (**DUBLIN:** Lucan (O0335) [R. Liffey]; Talka [R. Tolka] (Glasnevin) (O1337). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Denough [Deenagh] (V9792) and Flesk (V9689) Rivers; Devil's Punch Bowl (V9781); Gap of Dunloe (V8787); Horses' Glen (V9981); Kilbrean Laogh (W0093); Muckross Abbey (V9787); Ross Castle (V9488). **MAYO:** Ballin (L9987), Cogaula (M0486), Cushinsheen (M0482), Doo (L8368), Doogan (M0094), Kip (M0880) and Knappagh [Knappaghbeg] (M0080) Laoghs; Carrowbeg (M0084) and Newport (L9994) Rivers. **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Bog of Allan [Allen] (N0639); Coosan (N0446) [L. Ree]; Shannon (N0341)). *King and Halbert, 1910 as Leptocerus* (**ARMAGH:** Coney Island (H9364); Lowry's L. (H9144); Milford (H8543), etc. **CORK:** Mallow (W5598) [R. Blackwater]. **DONEGAL:** Coolmore (G8566); Kilmacrennan district (C1420) [Leannan R.]; Loughs Gorteen (C0818) and Keel (C1524), etc. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Maumwee [Manwee] L. (L9748). **KERRY:** Devil's Punch-bowl (V9781); Gap of Dunloe (V8787); Killarney and Muckross (V9786) districts, etc. **MAYO:** Newport (L9893) and Westport (L9984) districts, various loughs. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WATERFORD:** Cappoquin (X0999); Dromana (X0994); Glenshelane (S1203); Lismore (X0498)). *Halbert, 1912* as *Leptocerus* (**MAYO:** Newport (L9893); Westport (L9984)). *Mosely, 1927* as *Leptocerus* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Leptocerus* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Leptocerus* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Beirne, 1939* as *Leptocerus* (**CORK:** Ballyhooly (W7298) [R. Blackwater]). *Frost, 1939* as *Leptocerus* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Frost, 1942* as *Leptocerus* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Beirne and Harris, 1946* as *Leptocerus* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Neboiss, 1963* as *Athripsodes cinerea* (**GALWAY:** Connemara, July [1835, J. Curtis]); *Moriarty, 1972a* (unsafe larval identification

(Wallace, pers. comm.)). *Moriarty, 1973a* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1973b* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1974* as *Athripsodes cinerea* (unsafe larval identification (Wallace, pers. comm.)). *O'Connor and Norton, 1977* (**WESTMEATH:** Hare Island, L. Ree (N0446)). *Speight, 1977* as *Leptocerus* (**ROSCOMMON:** Yew Pt. [Point] (N0146)). *Moriarty, 1978* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H6906), adults. **WICKLOW:** L. Dan (O1502), adults). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *Wallace, 1981* (**CAVAN**. **CLARE**. **KERRY**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9191), (V9290), (V9490); Muckross Lake (V9585), (V9685); Upper Lake [Killarney] (V8981)). *Murphy and Carter, 1984* (**ANTRIM:** L. Neagh (J1181), (J0485). **DERRY:** L. Neagh (H9485)). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Carter and Murphy, 1993* as *Arthripsodes* (**IRELAND:** L. Neagh). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 27 out of 70 sampled sites). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (W0387), (V9890); R. Laune (V8991)). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 39 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *Millane, 2006* (**MAYO:** L. Carra (M1673), (M1777)). *Atalah et al., 2010* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**GALWAY:** lowland lake (M0927)). *Little and Free, 2013* (**CAVAN:** Derrybrick [Garfiny L.] (H3412); L. Ramor (N6285); L. Sillan (H7106). **CLARE:** L. Bunny (R3796). **CORK:** Glenbeg L. (V7053). **DONEGAL:** Gartan L. (C0515); Kiltooris Lake (G6797); Kindrum L. (C1843); Namanfin [lake top of Corker R. near Ardara] (G7983); L. Anure (B8216); L. Barra (B9312); L. Eske (G9783); L. Fern (C1823); L. Key [grid reference of G8460 seems incorrect and not included]; L. Mourne (H0790); L. na Lughraman (G6588); L. Naminn (C3941); L. Veagh [L. Beagh] (C0121); L. Waskel (B7316). **GALWAY:** Aughrusbeg L. (L5558); Ballinahinch [Ballynahinch Lake] (L7648); Glendollagh [Garroman] [Lake] (L8447); Glenicmurrin L. (M0031); L. Anaserd (L6044); L. Ardderry (L9945); L. Corrib (M2541); L. Fee (L7961); L. Inagh (L8452); L. Maumeen [the grid reference of L6141 appears to be in the sea and not included]; L. Manwee (L9748); L. Nafooey (L9759); L. Shindilla (L9646); Ross Lake (M1836). **KERRY:** Cloon L. (V7078); Cloonaghlin L. (V6070); Cloonee L. (middle) (V8164); Glanmore Lake (V7755); L. Caragh (V7190); L. Currane (V5165); L. Inchiquin (V8363); Upper Lake, Killarney (V9282). **LEITRIM:** Glenade L. (G8246); L. Bofin (N0489); McNean [L. Macnean Upper] (H0239); L. Melvin (G9054); Rowan L. (H0805). **LONGFORD:** L. Forbes (N0882); L. Kinale (N3980). **MAYO:** Fin L. (L8465); Glencullin [Glenullin] L. (L8169); L. Mask (M1060). **MEATH:** L. Bane (N5571). **MONAGHAN:** White L. (H6819). **ROSCOMMON:**

Annaghmore L. (M9083); Cavetown L. (M8397); Errit L. (M5485); L. Conn (G1810); L. Drumharlow (G9001); L. O'Flynn (M5879). **WESTMEATH:** Coosan L. (N0544); L. Derravaragh (N4066); L. Lene (N5368); Killinure [L. Ree (N0745)]. **WICKLOW:** L. Dan (O1502)). *O'Connor, 2013b* (**KERRY:** L. Currane (V5065); L. Leane (V9686), (V9488); Muckross Lake (V9485), (V9685); R. Inny (V5572)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** Kellswater (J1698); R. Braid (D1003); R. Bush (C9436); R. Clogh (D0613); R. Main (J0889). **ARMAGH:** Forkhill R. (J0115); R. Cusher (J0350). **DERRY (LONDONDERRY):** R. Aghadowey (C8722); R. Ballinderry (H9279). **DOWN:** Newry R. (J0730); R. Lagan (J2551); Upper Bann (J1345). **FERMANAGH:** R. Arney (H1737); R. Ballinamallard (H2853); R. Sillees (H1152), (H2341). **TYRONE:** Ballynahatty Water (R. Owenreagh) (H4367); Eskragh Water (Quiggery Water) (H4763); Fairywater (H3976); R. Ballinderry (H8376); R. Blackwater (H7544), (H6253); R. Camowen (H4673); R. Cloghfin (H5170); R. Derg (H1980), (H3184); Quiggery Water (H4467)). *O'Connor and O'Connor, 2014a* (**KILKENNY:** R. Nore, Inistioge (S6337)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Lower L. Erne (H1758)). *Anon., 2015a* (**CLARE:** L. Bunny (R3896). **DUBLIN:** Liffey Valley Park, Waterstown (O0835); Phoenix Park (O1235), (O1036). **KERRY:** Killarney National Park (V9490)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** R. Sillees (H2341)).

Unpublished records and voucher specimens

ARMAGH: Armagh (H8745), ♂, conf. JPOC (NMI); **L. Neagh** (H9364), Coney Island, ♂ 17 July 1891, WFJ, conf. JPOC (NMI); **Lowry's L.** (H9144), ♂ 9 July 1891, WFJ, conf. JPOC (NMI). **CARLOW: Bahana Woods** (S7239), 3♂♂ 14 June 1991, JPOC/MAOC, det. JPOC; **R. Barrow** (S7238), St Mullins, 2♂♂ 17 June 1991 & ♂ 15 August 1994, JPOC/MAOC, lockhouse, 31♂♂28♀♀ 22 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9161), Clonegal, adult 31 August 1946, JRH; **St Mullins** (S7238), ♂ 9 August 1994, JPOC, (S7237), small river entering R. Barrow, ♂ 1 July 1991, 6♂♂♀ 5 July 2014, JPOC/MAOC, det. JPOC. **CAVAN: Annagh L.** (H3912), adults June-October, MK; **Corrakane L.** (H4000), small lake, LT 2♂♂ 4-5 August 1973, JPOC; **L. Brackley** (H1921), 5♂♂ 4 August 1973, JPOC; **L. Cuilcagh** (N6389), ♂14♀♀ 10 August 1972, JPOC, 8♂♂2♀♀ 1 August 1986, CM/OSF (SINMNH); **L. Gowna** (N2889), larvae 1996/1997, JW; **L. Mullagh** (N6785), 2♂♂13♀♀ 10 August & ♂ 31 August 1972, 4♂♂ 1 August 1973, JPOC; **L. Ramor** (N6087), 11♂♂ 2 August 1973, JPOC, larvae 1996/1997, JW, (N5987), 6♂♂12♀♀ 10 August 1972, JPOC; **L. Sheelin** (N4686), 26 August 1946, JRH, (N4785), Mount Nugent, 2♀♀ 1 August 1986, CM/OSF (SINMNH), (N4686), Crover, 5♂♂♀ 6 August 1990, (N4285), Kilnahard, ♂ 1 August 1986, (N4786), 6♂♂7♀♀ 3 August 1973, JPOC, (N4384), Kilnahard Bay, ♂ pupa 10 July 1975, KFW, det. JPOC, (N4783), east shore, Tonagh, ♀ 30 July 2012, MG, (N4182), ♂♀ 8 July 1975, MFOG, det. JPOC, IETS 1973/1974: (N4384), Kilnahard Bay, adult, (N4685), Crover, 8 adults, PG; **L. Sillan**, (H6906), LT 2♂♂4♀♀ 31 July-1 August

1973, (H7007), lamp 5♂♂ 27 July 1972, (H7106), 12♂♂7♀♀ 9 August & ♂4♀♀ 11 August 1972, JPOC; **Moyduff Lake** (H6909), 2♂♂ 10 August 1973, JPOC; **Town Lake** (H6014), Cootehill, adult 12 August 1965, JRH; **R. Annalee** (H6709), ♂ 1 September 1972 (NMI), (H6810), ♂ 1 September 1972, (H4511), ♂♀ 3 October 1972, (H6910), ♂3♀♀ 27 July 1972, (H6806), above L. Sillan, 12♂♂ 27 July 1972, (H7205), below L. Sillan, 7♂♂4♀♀ 1 August 1973, JPOC; **R. Blackwater** (N5992), above L. Ramor, 5♂♂6♀♀ 2 August 1973, (N6383), below L. Ramor, ♂ 2 August 1973, JPOC, 3♂♂2♀♀ 1 August 1986, CM/OSF (SINMNH); **R. Laragh** (H5210), LT 2♂♂ 2-3 August 1973, JPOC; **R. Shannon** (G9726), LT ♂ 3-4 August 1973, JPOC. **CLARE: Annageeragh R.** (R0371), 2♂♂2♀♀ 9 July 1973, JPOC; **Doolough** (R1171), ♂6♀♀ 9 July 1973, JPOC, larvae 1996/1997, JW; **Doonbeg R.** (R1261) [Greygrove R.], ♂ 9 July 1973, JPOC; **Dromore Lake** (R3586), larvae 1996/1997, JW; **Knockalough** (R1463), ♂2♀♀ 9 July & 3♂♂ 29 August 1973, LT ♂ 8-9 July 1973, JPOC; **Lickeen L.** (R1690), 3♂♂ 11 August 2003, (R1691), 2♂♂ 31 August 1973, (R1891), ♂ 10 July 1973, JPOC; **L. Ballycullinan** (R2885), larva 1996/1997, JW; **L. Bunny** (R3796), MVLT adult 23 August 2003, GAC (per IDW), ♂ 31 August 1973, JPOC, larvae 1996/1997, JW; **L. Cullaun** (R3290), larvae 1996/1997, JW; **L. Derg** (R7071), Killaloe, Fannan, adult, det. JRH, (R6878), Tirana Bay, 4♂♂2♀♀ 13 July 1973 (NMI), ♂ 17 June 1976 (NMI), LT 67♂♂27♀♀ 2-3 September 1973, (R6979), LT 9♂♂2♀♀ 2-3 September 1973, JPOC, (R6876), north of Killaloe, 3♂♂4♀♀ 6 August 1986, (R4767), north of Sixmilebridge [Rally R.], ♂ 6 August 1986, CM/OSF (SINMNH); **L. Doon** (R5674), ♂♀ 12 July 1973, JPOC; **L. Graney** (R5691), 3♂♂2♀♀ 3 September 1973, JPOC, larvae 1996/1997, JW; **L. Inchiquin** (R2789), 6♂♂11♀♀ 10 July & LT 10♂♂5♀♀ 31 August-1 September 1973, JPOC, larvae 1996/1997, JW; **L. Moghna** (R1384), 13♂♂ 9 July 1973, JPOC; **O'Brien's Big Lake** (R4182), 3♂♂3♀♀ 11 July 1973, JPOC; **R. Cullenagh** (R1388), LT ♂ 9-10 July 1973, JPOC; **R. Ennistymon** (Inagh R.) (R1288), ♂ 10 July 1981, JPOC; **R. Fergus** (R3489), ♂♀ 11 July 1973, (R3480), outside Ennis, 2♂♂ 11 July 1973, JPOC; **R. Rinne** (R4174), ♂ 12 July 1973, JPOC; **R. Shannon** (R6767), O'Brien's Bridge, 7♂♂4♀♀ 3 September 1973, JPOC, (R7072), Killaloe, 4♂♂5♀♀ 6 August 1986, CM/OSF (SINMNH); **Teereen L.** (R4671), LT 25♂♂16♀♀ 11-12 July 1973, JPOC. **CORK: Ballyhooly** (W7298) [R. Blackwater], adult 12 August 1938, BPB (BMNH); **Mallow** (W5598) [R. Blackwater], ♀, conf. JPOC (NMI); **R. Blackwater** (W5397), west of Mallow, 2♀♀ 4 August 1986, CM/OSF (SINMNH); **R. Lee** (W5671), adults June-October, MK. **DONEGAL: Coolmore** (G8566), ♂ 9 November 1893, [WFJ], conf. JPOC (NMI); **Glenveagh National Park** (C0423), at light ♀ 4 August 1982, COK, det. JPOC (NMI), MVLT ♂♂ 11 August 1984, KGMB, det. JPOC, (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT ♀ 10-30 July 1998, MCDS, det. JPOC. **DUBLIN: R. Dodder** (O1730), Clonskeagh, adult 15 June 1945, JRH; **R. Liffey** (O0335), Lucan, adult 12 June 1945, JRH; **Royal Canal** (O0637), Clonsilla, ♂ 3 July 1977, JPOC, (O0438), under Clonsilla bridge, ♂ 7 July

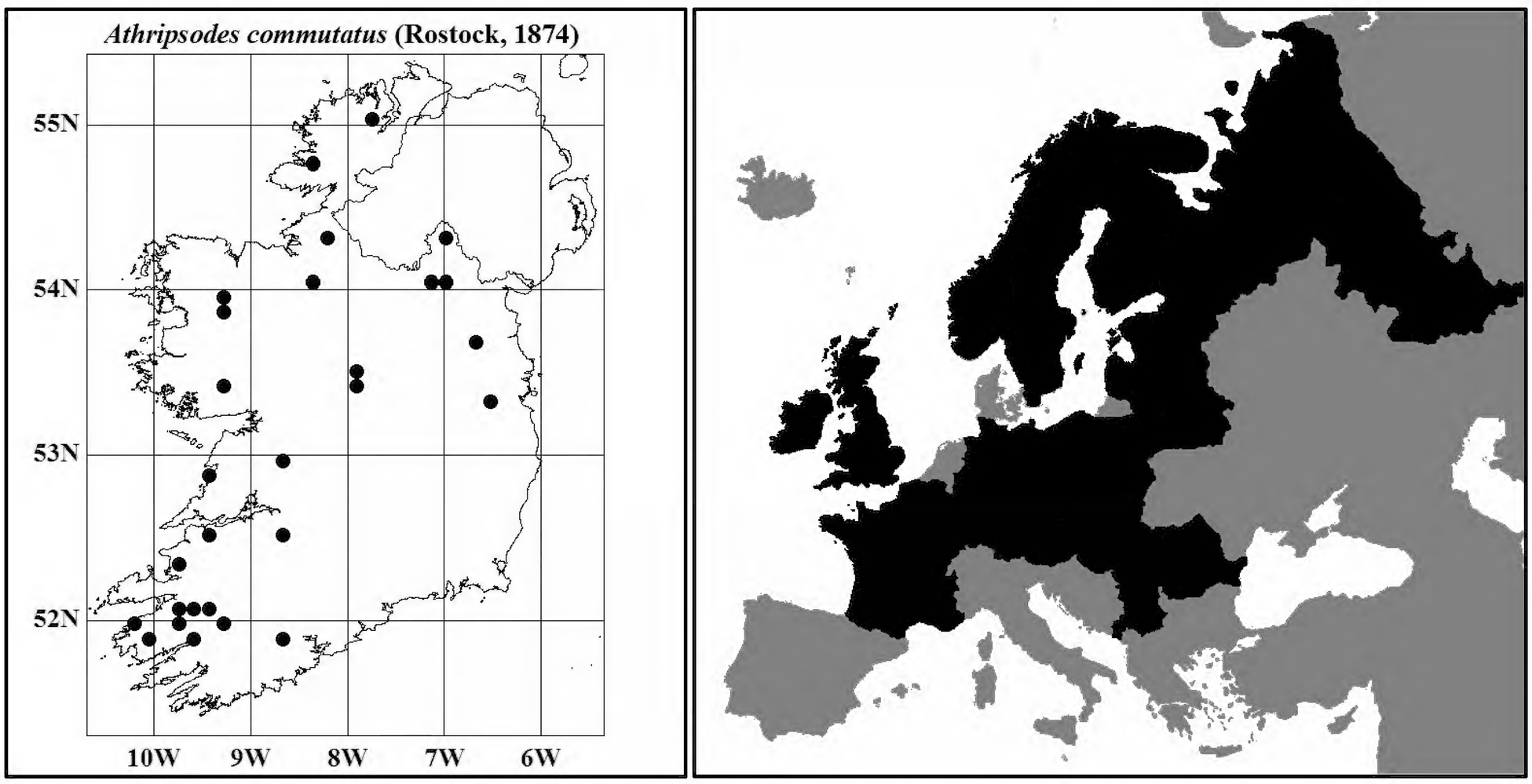
1977, JPOC/MAOC, det. JPOC. **GALWAY: Connemara National Park** (L7157), RLT ♂ 18 August 1982, COK, det. JPOC (NMI); **Dunkellin R./Rahasane Turlough** (M4719), larva 21 September 1983, PB, det. JPOC; **Hackett L.** (west side) (M3049), Lisdonagh, MT ♂3♀♀ 12-26 June 2014, JC, det MG; **Inverin** (M0822), adults 17 July-2 August 1926, MEM (BMNH); **L. Ballyquirke** (M2331), larva 1996/1997, JW; **L. Corrib** (M1745), adults June-October 1964, MK, (M2531), Hurney's Point [near Moycullen], MVLTS 2♂♂ 30 July & 3♂♂ 28 August 2003, KGMB, det. JPOC, (M2531), Lower, ♂♀ 17 July 1980, BC, conf. JPOC (NMI), (M1343), Oughterard, 8♂♂♀ 10 August 1981, HM, det. H. Malicky, (M2341), Knockferry, LT 5♀♀ 21 August 2014, MG/CC, det. MG; **L. Cutra** (R4698), MVLTS ♂ 23 June & ♂ 30 August 1996, KGMB, det. JPOC; **L. Rea** (M6215), larvae 1996/1997, JW; **L. Mask** (M0957), Kilbeg Lower, LT ♂ 16 August 2014, MG; **Ma'am** [Maam] (L9653), 3♂♂, JJFXK, conf. JPOC (NMI); **Oughterard** (M1343), adults 3-9 August 1926, MEM (BMNH). **KERRY: drain** (R0539), near R. Galey, 2♂♂ 8 July 1973, JPOC; **Kilbrean Lake** (W0093), 6♂♂10♀♀ 7 September 1972, JPOC (NMI); **Killarney**, adult 12 July 1887, [JJFXK] (BMNH), ♂ 24 June, ♂ 11 July & ♀ 21 July, ♂ 5 August 1887, JJFXK, conf. JPOC (NMI), ♀♀ August 1940, BPB, det. JRH; **Killarney Lakes**, trout stomachs, larva, UCD, det. JPOC; **L. Caragh** (V7292), 5♂♂7♀♀ 27 August 1973, (V7392), ♂ 5 July 1973, JPOC; **L. Cummernamuck** (V7489), ♂ 5 July 1973, JPOC; **L. Currane** (V5065), Waterville, adult 18 August 1965, JRH, (V5265), ♂2♀♀ 6 July 1973, JPOC; **L. Derriana** (V6073), 4♂♂ 26 August 1973, JPOC; **L. Garragarry** (V9983), larvae June 1974, IDW; **L. Guitane** (W0385), 2♂♂4♀♀ 3 July 1973, JPOC; **L. Leane** (V9291), ♂ 1 September 1972 (NMI), (V9291), Hotel Europe, 2♂♂ 5 September 1972, larva July 1972, EJW, det. IDW (NMI), (V9590), Kenmare Estate, ♂ 5 September 1972, (V9291), Golf Course, 6♂♂18♀♀ 24 August 1973, (V9686), boat house, 3♂♂5♀♀ 24 August 1973, all JPOC, (V9490), larva 16 November 1971, EJW, det. IDW (NMI); **L. Looscaunagh** (V8879), 4♂♂2♀♀ 4 August 1986, CM/OSF (SINMNH); **Muckross** (V9786), adult 18 August 1877, AEE (BMNH); **Muckross Lake** (V9684), Torc Shore, 2♂♂ 24 August 1973, JPOC, (V9685), Goleen, larvae, June 1974, IDW, (V9585), larva 17 November 1971, EJW, det. IDW (NMI); **R. Caragh** (V7184), 4♂♂ 3 July 1973, JPOC; **R. Ferta** (V5282), 4♂♂ 6 July 1973, JPOC; **R. Flesk** (V9689), 5♂♂♀ 25 June 1973, (V9789), ♀ 5 September 1972, both JPOC; **R. Galey** (R0438), 12♂♂8♀♀ 8 July 1973, JPOC; **R. Laune** (V8991), ♂2♀♀ 24 August 1973, JPOC (NMI), larva 16 November 1971, EJW, det. IDW (NMI); **R. Maine** (Q8905), 16♂♂18♀♀ 7 July 1973, JPOC; **Roughty R.** (V9371), tidal, 13♂♂4♀♀ July 1973, JPOC; **stream** (Q8905), entering R. Maine, 21♂♂♀ 7 July 1973, JPOC; **Upper Lake, Killarney** (V9181), 3♂♂4♀♀ 3 July 1973, JPOC. **KILDARE: R. Blackwater** (N8132), Donadea, adult 2 August 1947, JRH; **R. Boyne** (N6643), larvae May 1990, DAG/JML, det. JML; **Rye Water** (N9538), Carton, adult 31 July 1947, JRH. **KILKENNY: R. Nore** (S6337), Inistioge, adult 17 August 1963, JRH, 12♂♂3♀♀ 10 July 2014, 12♂♂18♀♀ 21 July & ♂3♀♀ 30 July

2015, JPOC/MAOC, det. JPOC. **LAOIS: R. Barrow** (N6210), below Monestrevan, 2♂♂3♀♀ 3 August 1986, JPOC, (N6301), Dunrally Bridge, 10♂♂9♀♀ 3 August 1986, CM/OSF (SINMNH). **LEITRIM: Bonet R.** (G8231), larvae 25 March 1991, DAG/JML, det. JML; **L. Corry** (M9497), shore collection, larva 19 July 1972, AFF, det. JPOC. **LIMERICK: R. Shannon** (R6663), Castleconnell, ♀ 3 August 1988 (NMI), LT 2♂♂5♀♀ 12-13 July 1973, both JPOC, (R5456), below Limerick, larvae 13 July 1972, AFF, det. IDW. **MAYO: Castlebar** (M1188), adults June-October 1964, MK; **L. Carra** (M1673), adults June-October 1964, MK; **L. Conn** (G1516), adults June-October 1964, MK, (G1516), adult 30 August 1948, RS, det. JRH; **L. Feeagh** (F9700), larvae 1996/1997, JW; **Westport** (L9984), 3♂♂, JJFXK, conf. JPOC (NMI). **MEATH: Kells Blackwater R.**, adult 21 July 1964, JRH, (N7377), 5♂♂♀ 1 August 1986, JPOC; **R. Blackwater** (N7377), west of Kells, 4♂♂2♀♀ 1 August 1986, CM/OSF (SINMNH), ♂3♀♀ 13 June 1976, JPOC, **R. Boyne** (O0373), Donore, adult 1 June 1946, JRH, (N7149), larvae July 1991, (N7352), larvae July 1991, DAG/JML, det. JML. **MONAGHAN: Emyvale** (H6843), ♂♂ 20-30 July [1885-6] and 4-11 August 1916, KJM (NMS); **Glaslough** (H7241), ♂ August 1892, KJM (NMS), 17♂♂4♀♀ 12 August 1973, JPOC. **OFFALY: R. Boyne** [Tullamore R.] (N2525), Rahan, adult 17 July 1947, JRH. **ROSCOMMON: L. Ree** (N0245), Yellow Island, ♂ 22 August 1958, PHW, conf. JPOC (BMNH); **R. Shannon** (N0339), downstream of Athlone, larva 13 July 1972, AFF, det. JPOC. **SLIGO: L. Arrow** (G7711), adults June-October 1964, MK; **L. Bo** (G7918), adults June-October 1964, MK; **L. Gara North** (G7101), larva 1996/1997, JW; **L. Gara South** (M6997), larva 1996/1997, JW; **L. na Léibe** (L. Labe) (G7212), adults June-October 1964, MK; **L. Talt** (G3915), larvae 1996/1997, JW. **TIPPERARY: Breagagh R.** (S1458), larvae 5 September 1991 & 6 July 1992, DAG/JML, det. JML; **Brownstown R.** (S1665), larvae 5 September 1991 & 10 March 1992, DAG/JML, det. JML; **Holycross** (S0854), ♂ 23 June 1984, KGMB; **Kilmastulla R.** (R6867), (R9173), larvae/adults 1976-1977, MAOC; **R. Black** (S1957), larvae 5 September 1991, DAG/JML, det. JML; **R. Drish** (S2163), larvae 5 September 1991, 10 March & 6 July 1992, (S2063), larvae 19 September 1991, 10 March & 6 July 1992, (S1961), larvae 19 September 1991, 10 March & 6 July 1992, (S1759), larvae 5 September 1991, 10 March & 6 July 1992, DAG/JML, det. JML; **R. Shannon** (R7073), near Killaloe, 2 larvae 1972, AFF, det. JPOC; **R. Suir** (S0424), Cahir, 2♂♂♀ 3 August 1986, CM/OSF (SINMNH), (S0522), Swiss Cottage, Caher [Cahir], ♂3♀♀ 18 July 1990, JPOC, (S1267), larvae 19 September 1991, 10 March & 22 May 1992, (S1362), larvae 19 September 1991, 10 March & 22 May 1992, (S1258), larvae 19 September 1991 & 10 March 1992, (S1255), larvae 19 September 1991, 10 March & 22 May 1992, DAG/JML, det. JML. **WATERFORD: Belle Lake** (S6605), ♂ 5 July 1990, JPOC; **Lismore** (X0498), ♂, conf. JPOC (NMI). **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂♂ 6 July & 18-19 July 1888, JJFXK (NMS), ♂ 29 June, ♂ 6 July, ♂ 13a July, ♂ 19 July & ♀ 25a July 1888, JJFXK, conf. JPOC (NMI), adults 20 August 1958, PHW (BMNH); **L.**

Derravaragh (N4662), 4♂♂ 18 August 1978, JPOC, (N4663), adults June-October 1964, MK, IETS 1973/1974: (N4169), Coolure Bay, 7 adults, (N4168), near Derrya, adult, PG; **L. Ennell** (N4046), Tudenham, 2♂♂♀ 9 July 1997, reed bed, larva, JPOC, IETS 1973/1974: (N4048), Shaunoge Shallows, adult, (N4149), Rushy Island, adult, PG; **L. Lene** (N5368), larvae 1996/1997, JW; **L. Owel**, IETS 1973/1974: (N4156), near Beach Hill, 6 adults, (N4056), Tullaghan shore, adult, (N4158), Gaynor Point, 3 adults, (N3944), Robin's own shore, 2 adults, PG; **L. Ree** (N0245), Carby [Carberry] Island, adult 18 August 1958, PHW (BMNH), (N0446), Hare Island, 2♂♂ 19 June 1976, JPOC; **L. Sheelin** (N4281), near Finnea, Bog Bay, 2♂♂ 17 June 1973, JPOC, (N4381), off Goreport Point, IETS 1973/1974 5 adults, PG; **R. Deel** (N5565), larvae July 1991, (N5954), larvae September 1989, (N6949), larvae July 1991, DAG/JML, det. JML. **WEXFORD: angling ponds near Kellystown** (S8930), 2♂♂2♀♀ 6 July 2014, JPOC/MAOC, det. JPOC; **R. Slaney** (S9739), Enniscorthy, ♂8♀♀ 27 July 2015, (S9738), 5♂♂6♀♀ 28 July 2015, all JPOC/MAOC, det. JPOC. **WICKLOW: L. Dan** (O1504), ♂ July 1971, JPOC, (O1502), 7♂♂6♀♀ 1 August, 5♂♂2♀♀ 4 August, 4♂♂6♀♀ 16 August & 4♂♂ 24 August 1972, 3♂♂♀ 12 August & ♂ 19 August 1973, JPOC, larvae 1996/1997, JW; **Poulaphuca (Blessington) Reservoir** (N9610), adult 29 June 1947, JRH; **Vartry Reservoir** (O1903), LT ♂ 19-20 August 1973, JPOC, (O2004), Roundwood, LT 2♂♂ 12 July 1983, HAD, det. JPOC.

131. *Athripsodes commutatus* (Rostock, 1874)

FIGURES 314-315. Known Irish and European distributions of *Athripsodes commutatus*.



Athripsodes commutatus is widely distributed in Ireland but has yet to be recorded from the south-east or north-east. The larvae occur in rivers and their cases are composed of sand grains. Like many other *Athripsodes* species, the larvae are probably omnivorous. The species is found in much of Europe.

Flight period: June–September (21 June–10 September).
Counties and 10km squares: Cavan, Clare, Cork, Donegal, Dublin, Galway, Kerry, Leitrim, Limerick, Mayo, Meath, Monaghan, Sligo, Westmeath (14/32). The species is known from twenty-eight 10km squares (28/1019).

Published records

King, 1888a as *Leptocerus* (**DUBLIN:** Lucan Demesne (O0235) [R. Liffey]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **KERRY:** Cloghereen (V9787); Denough [Deenagh] (V9792) and Flesk (V9689) Rivers; Gap of Dunloe (V8787); Ross Castle (V9488); The Glen in Deer Park (V9792)). **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Glasson (N0947)). *King and Halbert, 1910* as *Leptocerus* (**DONEGAL:** Ardara (G7390) [Owntocker R.]; Cottian (C1318) [Leannan R.]; Lennan Bridge (C1621) [Leannan R.]; L. Fern (C1824). **DUBLIN:** Lucan demesne (O0235) [R. Liffey]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **KERRY:** Killarney district; Loo Bridge (W0881) [on the upper R. Flesk]; near Kenmare (V9471). **MONAGHAN:** Emyvale (H6843). **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Glasson (N0947)). *Mosely, 1930* as *Leptocerus* (**GALWAY:** Oughterard (M1343)). *Speight, 1977* as *Leptocerus* (**WESTMEATH:** Coosan Lake [Coosan Point (N0446)]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7881)). *Wallace, 1981* (**KERRY**). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** common). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** common). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Atalah et al., 2010* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** R. Flesk (V9789); R. Galey (R0139); R. Inny (V5572)).

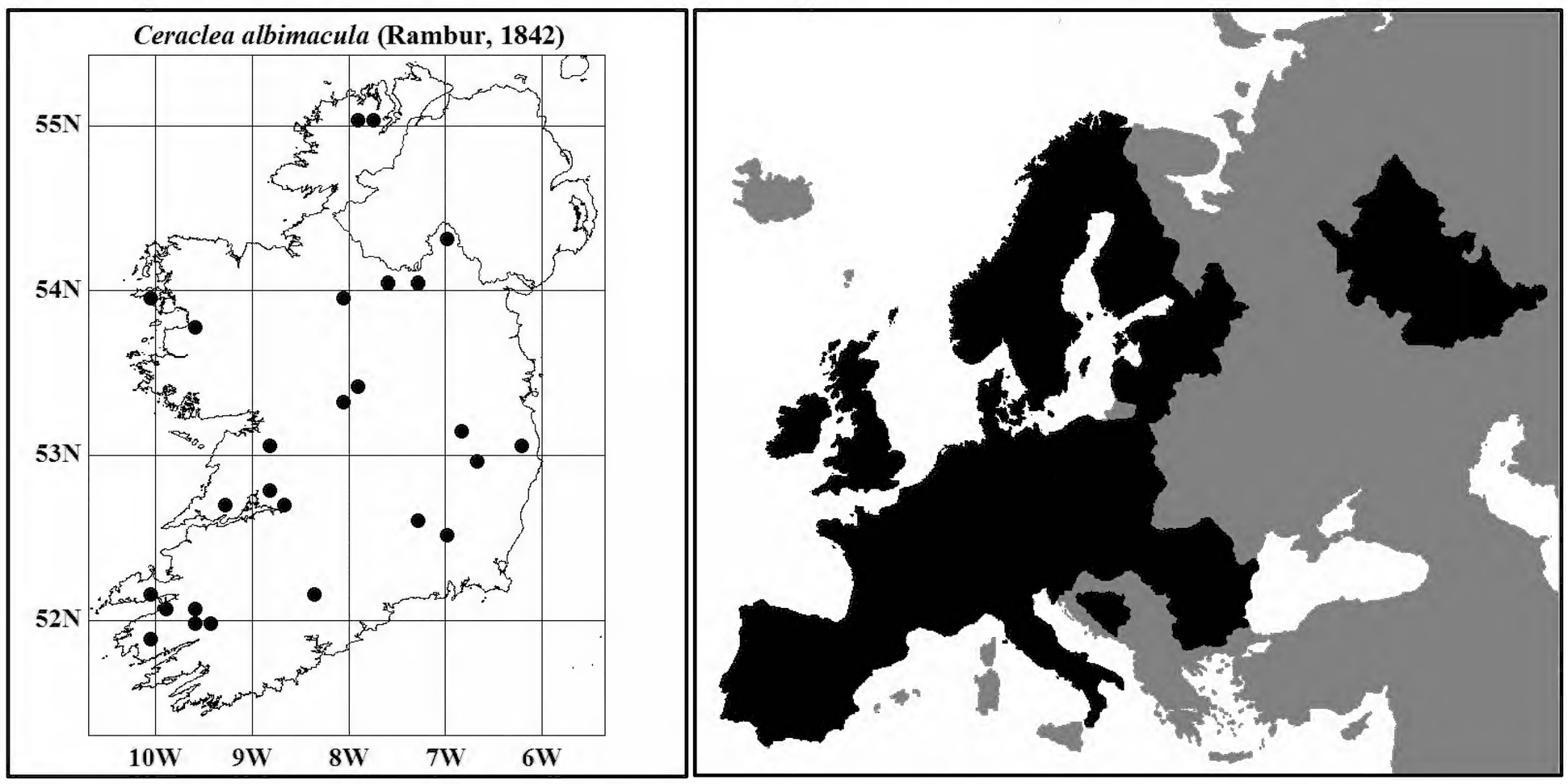
Unpublished records and voucher specimens

WEST IRELAND: adult 1886, JJFXK (BMNH).
CAVAN: R. Annalee (H6810), 10♂♂4♀♀ 1 September 1972, JPOC; **R. Laragh** (H5210), LT 3♂♂ 2-3 August 1973, JPOC. **CLARE: L. Graney** (R5691), near river, 2♂♂ 3 September 1973, JPOC; **Spanish Point** (R0477), brook near Milltown [Malbay], ♂ 9 August 1981, HM, det. H. Malicky. **CORK: R. Lee** (W5671), adults July-September, MK. **DONEGAL: Ardara** (G7390) [Owntocker R.], ♂, [WFJ], conf. JPOC (NMI). **GALWAY: Oughterard** (M1343), ♂ 3-9 August 1926, MEM, conf. JPOC (BMNH). **KERRY: Killarney**, ♂ 18a July 1887, JJFXK, conf. JPOC (HMAG, NMS), adult 21 June 1887, [JJFXK] (BMNH), ♂ 5 July & ♂ 18a July 1887, JJFXK, conf. JPOC (NMI), ♂ 4 August 1887 (misidentified as *Athripsodes albifrons*), [JJFXK], det. JPOC (NMI); **R. Brick** (Q8523), ♂♀ 28 August 1973, JPOC; **R. Ferta** (V5282), 5♂♂6♀♀ 6 July & 5♂♂2♀♀ 26 August 1973, JPOC (NMI); **R. Finnihy** (V9072), ♂♀ 26 August 1973, JPOC; **R. Flesk** (V9689), ♂ 5 September 1972, JPOC, (V9890), LT ♂ 27 July 1977, MFOG (NMI); **R. Gaddagh** (V8391), 5♂♂ 24 August 1973, JPOC (NMI); **Roughty R.** (V9371), ♂ 4 July 1973, JPOC. **LEITRIM: Bonet**

R. (G8444), larvae 25 June 1991, DAG/JML, det. JML. **LIMERICK: R. Maigue** (R5140), Croom, adult 2 September 1948, JRH. **MAYO: Castlebar** (M1188), adults July-September 1964, MK; **L. Conn** (G1705), south-west shore, adult 10 September 1947, D. Shackleton, det. JRH. **MEATH: R. Boyne** (N9271), Stackallen, adult 6 September 1946, JRH. **SLIGO: L. Arrow** (G7711), adults July-September 1964, MK. **WESTMEATH: Athlone** (N0341) [R. Shannon], adults 10b August 1888, JJFXK, ♂ conf. JPOC (BMNH, HMAG, NMS); **R. Shannon** (N0440), below Athlone, larva 13 July 1972, AFF, det. JPOC.

132. *Ceraclea albimacula* (Rambur, 1842)

FIGURES 316-317. Known Irish and European distributions of *Ceraclea albimacula*.



Ceraclea albimacula is widely distributed in Ireland. The cased larvae occur in rivers and large streams where they eat freshwater sponges (Porifera). The cases are variable in construction; some are composed entirely of a translucent flexible secreted material while others are partly made of sand grains. Malicky (2005) synonymised *C. albimacula* and *C. alboguttata* after showing from the male genitalia that the two "species" are extremes in the range of variation of a single taxon. The species is widespread in Europe.

Flight period: June–August (7 June–30 August) (October). Five adults were taken on 3 October.

Counties and 10km squares: Carlow, Cavan, Clare, Cork, Donegal, Galway, Kerry, Kildare, Kilkenny, Leitrim, Limerick, Mayo, Monaghan, Roscommon, Westmeath, Wicklow (16/32). The species is known from twenty-six 10km squares (26/1019).

Published records

McLachlan, 1874-1884 as *Leptocerus albo-guttatus* (**IRELAND**). *King 1888a as Leptocerus albo-guttatus* (**MAYO:** Knappabeg [Knappaghbeg] Laogh (M0080). **WESTMEATH:** Shannon below Athlone (N0440). *King and Halbert, 1910* as *Leptocerus albo-guttatus* (**DONEGAL:** Cottian (C1318) [Leannan R.]; Lennan

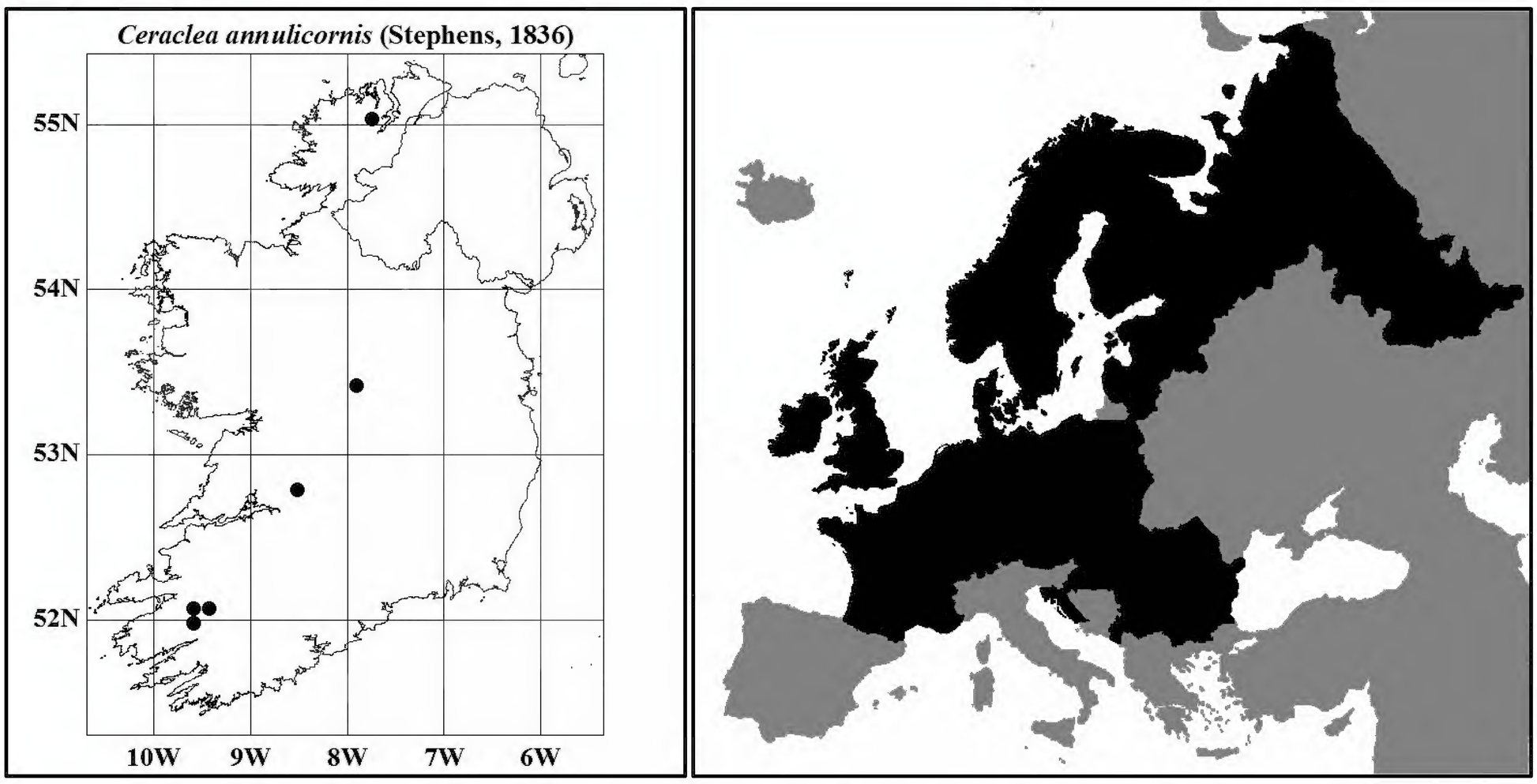
Bridge (C1621) [Leannan R.]; L. Fern (C1824). **KILKENNY**. **MAYO:** Knappabeg [Knappaghbeg] L. (M0080). **MONAGHAN:** Emyvale (H6843). **WESTMEATH:** Shannon below Athlone (N0440)). *Halbert, 1912* as *Leptocerus albo-guttatus* (**MAYO:** Westport (L9984)). *Botosaneanu and Malicky, 1978* as *Ceraclea alboguttata* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* as *Ceraclea alboguttata* (**KERRY:** R. Caragh (V7192)). *Wallace, 1981* (**CLARE**. **KERRY**). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); Muckross Lake (V9485); R. Inny (V5572)).

Unpublished records and voucher specimens

CARLOW: R. Barrow (S7238), St Mullins, ♂ 15 August 1994, K. O'Connor, det. JPOC. **CAVAN: Annalee R.** (H4511), 5♂♂ 3 October 1972, JPOC (NMI). **CLARE: R. Doonbeg** [Greygrove R.] (R1261), ♂ 9 July 1973, JPOC; **Sixmilebridge** (R4767) [Rally R.], north of, ♂ 6 August 1986, CM/OSF (SINMNH). **CORK: Ballyhooly** (W7298) [R. Blackwater], adult, BPB (BMNH). **DONEGAL: Glenveagh National Park** (C0423), RLT ♂ 6 August 1982, COK, det. JPOC (NMI). **GALWAY: L. Cutra** (R4698), MVLT ♂ 30 August 1996, KGMB, det. JPOC. **KERRY: Cummeragh R.** (V5872), ♂ 6 July (NMI) & 3 larvae 6 July 1973, (V5872), ♂ 26 August 1973, all JPOC; **Finow R.** (W0185), larvae June 1974, IDW; **L. Doon** [L. Slat] (Q6107), ♂ 28 August 1973, JPOC; **R. Laune** (V8991), Laune Bridge, larvae June 1974, IDW. **KILDARE: Newbridge (Pollardstown) Fen** (N7715), MVLT near springs, canal drains and *Schoenus* fen, ♂ 22 July 1989, KGMB/JAG, det. JPOC (NMI). **KILKENNY: Kilkenny** (S5055) [R. Nore], ♂ 13 November 1889, conf. JPOC (NMI). **LEITRIM: Killegar Estate** (H2507), LT ♂ 16 August 1991, SW, det. JPOC (NMI); **R. Shannon** (M9399), near Carrick on Shannon, dredge larva 20 July 1972, AFF, det. JPOC. **LIMERICK: R. Shannon** (R5456), below Limerick, larvae 13 July 1972, AFF, det. IDW. **MAYO: Achill** (F6405), ♂ 7 June 1909, JNH (NMI). **MONAGHAN: Emyvale** (H6843), ♂♂♀♀ 20-30 July [1885-6], Morton Coll. (NMS). **ROSCOMMON: R. Shannon** (M9828), larva 13 July 1972, AFF, det. IDW. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 19 July 1888, [JJFXK], conf. JPOC, RMCL Coll. (BMNH), ♂ 18 July 1888, [JJFXK], conf. JPOC, Morton Coll. (NMS), ♂ 9 July, ♂ 13a July, ♂ 19 July & ♂ 20b July 1888, JJFXK, conf. JPOC (NMI); **R. Shannon** (N0440), below Athlone, ♂ pupa 13 July 1972, AFF, det. JPOC. **WICKLOW: R. Slaney** (S8892), LT 2♂♂8♀♀ 24-25 July 1973, JPOC; **Vartry Reservoir** (O2004), Roundwood, LT ♂ 14 August 1983, HAD, det. JPOC.

133. *Ceraclea annulicornis* (Stephens, 1836)

FIGURES 318-319. Known Irish and European distributions of *Ceraclea annulicornis*.



Ceraclea annulicornis is a local species in Ireland. The cased larvae inhabit lakes and rivers. The cases are curved and composed of closely abutted sand grains. The larvae are detritus feeders. The species is widespread in much of Europe and also occurs in North America.

Flight period: June–July (14 June–24 July). There are very few Irish adult records. Barnard and Ross (2012) give the British flight period as May–August.

Counties and 10km squares: Clare, Donegal, Kerry, Roscommon, Westmeath (5/32). The species is known from six 10km squares (6/1019).

Published records

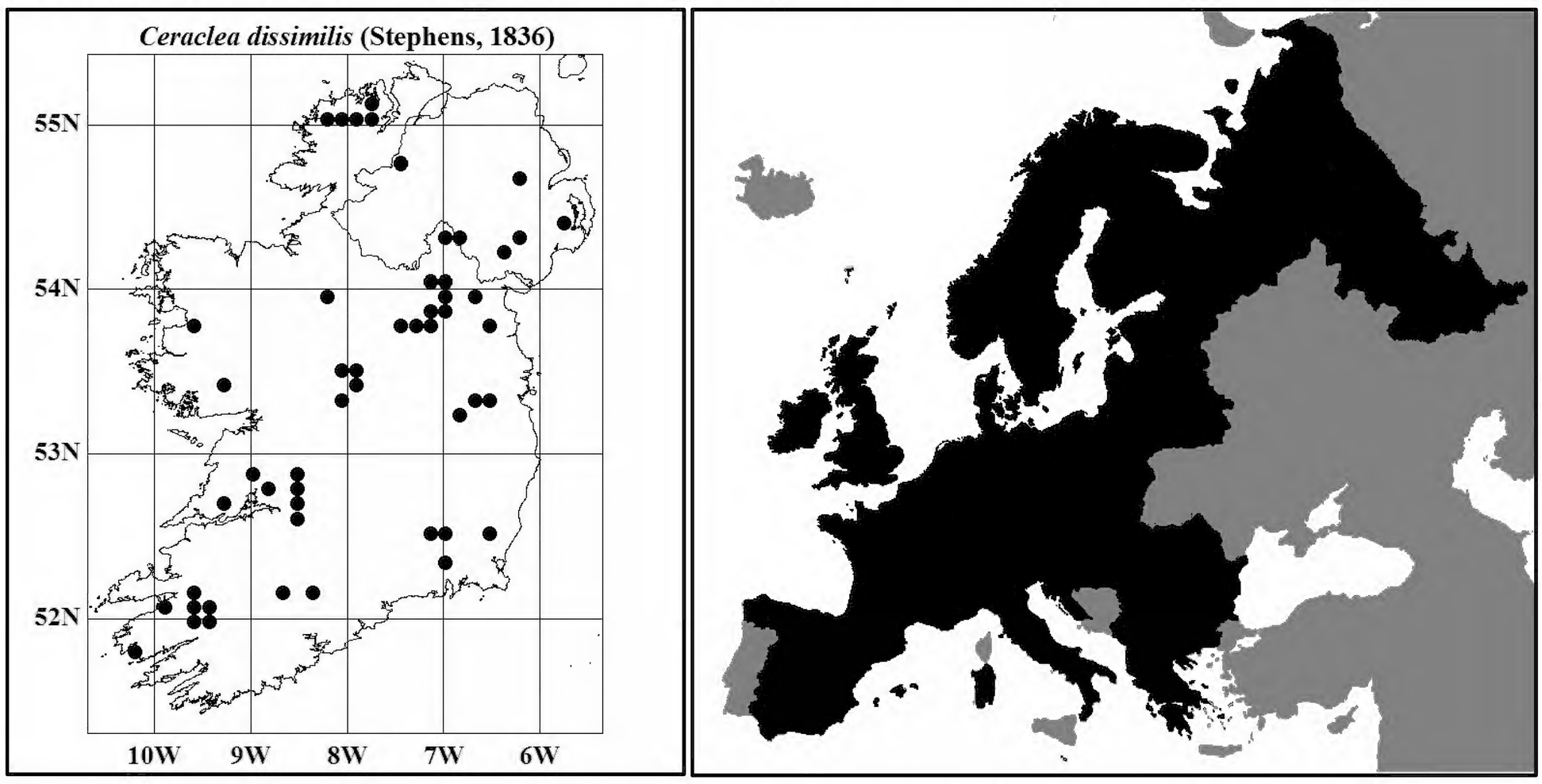
King, 1888a as *Leptocerus* (**KERRY:** Denough [Deenagh] R. (V9792); Ross Castle (V9488). **ROSCOMMON:** Shannon near Athlone (N0243). **WESTMEATH:** Shannon near Athlone (N0341)). *King and Halbert, 1910* as *Leptocerus* (**DONEGAL:** Gorteen and Fern (C1824) Loughs; Lennan [Leannan] R. (C1318). **KERRY:** Deenagh R. (V9792); Ross Castle (V9488); Windy Gap (V9178). **ROSCOMMON:** Shannon near Athlone (N0243). **WESTMEATH:** Shannon near Athlone (N0341)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Wallace, 1981* (**KERRY:** rivers...and lake shores in Ireland). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V9191), (V9290); Muckross Lake). *O'Connor, 1987* (**DONEGAL**. **KERRY**. **ROSCOMMON**. **WESTMEATH**). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** rarer in Ireland). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Bracken, 1998* (**KERRY:** Killarney). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** rarer in Ireland). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk (V9689); R. Laune (V8991)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

CLARE: Killaloe (R7072), adults 14 June & 16 June 1913, CJM, det. JRAG (IM) (per IDW). **DONEGAL: Kilmacrennan** (C1420) [Leannan R.], adults 2-3 July & 24 July 1891, [JJFXK], ♂ conf. JPOC (HMAG) also adult 1891 (TMM) (per IDW). **KERRY: Killarney**, ♂ 8 July 1887, JJFXK, conf. JPOC (NMI); **Killarney Lakes**, trout stomach, larva, UCD, det. JPOC; **L. Leane**, trout stomach, 2 larvae & ♂ 25 June 1972, JPOC (NMI), (V9191), larva 8 December 1971, EJW, det. IDW (NMI); **Muckross Lake** (V9485), Colleen Bawn (Baun), ♂ 26 June 1973, (V9685), Goleen, pupal case, both JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂♂♀♀ 6 July, 10 July & 19 July 1888, JJFXK, conf. JPOC (BMNH, NMS), ♂ 6-19 July 1888, [JJFXK], conf. JPOC (HMAG).

134. *Ceraclea dissimilis* (Stephens, 1836)

FIGURES 320-321. Known Irish and European distributions of *Ceraclea dissimilis*.



Ceraclea dissimilis is widely distributed in Ireland. The cased larvae inhabit lakes, rivers and streams. The case is curved and usually composed of closely abutted sand grains. The larvae graze what they can from rocks. The food may include sponges but it is not a common item (Wallace, pers. comm.). The species is widespread in Europe.

Flight period: June–September (14 June–19 September).

Counties and 10km squares: Antrim, Carlow, Cavan, Clare, Cork, Donegal, Down, Dublin, Galway, Kerry, Kildare, Kilkenny, Limerick, Mayo, Monaghan, Offaly, Roscommon, Tipperary, Tyrone, Westmeath, Wexford (21/32). The species is known from fifty-two 10 km squares (52/1019).

Published records

King, 1888a as *Leptocerus* (**DUBLIN:** Lucan Demesne [R. Liffey] (O0235). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **KERRY:** Boreen-a-morave (V9192) [misspelling for Boreen na Marbh, Aghadoe]; Denough [Deenagh] R.

(V9792); Devil's Punch Bowl (V9781); Glena (V9386) [beside L. Leane]; Ross Castle (V9488). **MAYO:** Carrowbeg R. (M0084). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Shannon side (N0243); Waterston Demesne (N0946); Wineport (N0746) [L. Ree]). *Morton, 1892b* as *Leptocerus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* as *Leptocerus* (**DONEGAL:** Cottian (C1318) [Leannan R.]; Fern (C1824), Gorteen (C0818) and Reelan (C1327) Loughs; Glenbeagh (B9918) [Owenbeagh R.]; Lennan R. (C1318) [Leannan R.]. **DUBLIN:** Lucan (O0235) [R. Liffey]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **KERRY:** Deenagh R. (V9792); Devil's Punch-bowl (V9781); Glena (V9386) [beside L. Leane]; Ross Castle (V9488); etc. **MAYO:** Carrowbeg R. (M0084). **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Shannon side (N0243); Waterstown demesne (N0946); Wineport (N0746) [L. Ree]). *Halbert, 1912* as *Leptocerus* (**MAYO:** Westport (L9984)). *Beirne, 1939* as *Leptocerus* (**CORK:** Ballyhooly (W7298) [R. Blackwater]). *O'Connor and Norton, 1977* as *Athripsodes* (**WESTMEATH:** Hare Island, L. Ree (N0446)). *Speight, 1977* as *Leptocerus disimilis* (**ROSCOMMON:** Yew Pt [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan Point (N0446)]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* as *Athripsodes* (**CAVAN:** L. Sillan (H6906), adults). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7192)). *Wallace, 1981* (**CAVAN. CLARE. KERRY**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V9191); Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 4 out of 70 sampled sites). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 1 out of 207 river sites). *Donohue et al., 2009* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**CAVAN:** L. Ramor (N6285). **KERRY:** L. Guitane (W0384)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685)). *O'Connor and Davy-Bowker, 2014* (**DOWN:** Newry R. (J0730); R. Annacloy (J4448); Upper Bann (J1345). **TYRONE:** R. Strule (H4186)).

Unpublished records and voucher specimens

ANTRIM: Rea's Wood (J1485), MT ♂ 19 July 1985, MB, det. JPOC. **CARLOW: R. Barrow** (S7237), St Mullins, LTS 2♂♂29♀♀ 22 July 2015, JPOC/MAOC, det. JPOC (NMI), (S7043), Tinnahinch, dead inside a light-fitting on a bridge, ♂ 21 August 1996, JPOC. **CAVAN: L. Cuilcagh** (N6389), 3♂♂ 1 August 1986, CM/OSF (SINMNH); **L. Ramor** (N5987), ♂ 10 August 1972, JPOC (NMI); **L. Sheelin** (N4785), Mount Nugent, ♂ 1 August 1986, CM/OSF (SINMNH), (N4285), Kilnahard, 3♂♂ 1 August 1986, JPOC; **L. Sillan** (H6906), ♂ 1 September 1972 (NMI), 3♂♂ 30 August 1972, LT ♂ 31 July-1 August 1973, (H7007), ♂ 9 August

1972, (H7106), 2♂♂ 1 September 1972, all JPOC; **R. Laragh** (H5210), LT 6♂♂ 2-3 August 1973, JPOC. **CLARE: Doonbeg** [Greygrove R.] (R1261), ♂ 9 July 1973, JPOC; **Knockalough** (R1463), ♂ 9 July & LT ♂♂ 8-9 September 1973, JPOC; **L. Derg** (R6979), LT 7♂♂2♀♀ 2-3 September 1973, JPOC; **R. Fergus** (R3480), Ennis, ♂ pupa & ♂ 11 July 1973, JPOC; **Sixmilebridge** (R4767) [Rally R.], north of, ♂ 6 August 1986, CM/OSF (SINMNH). **CORK: Ballyhooly** (W7298) [R. Blackwater], adult 9 August 1939, BPB (BMNH); **R. Blackwater** (W5397), west of Mallow, 4♂♂6♀♀ 4 August 1986, CM/OSF (SINMNH). **DONEGAL: Dunlewy** (B9119), LT ♀ *circa* 17 July 1980, JS, det. JPOC (NMI); **Glenveagh National Park** (C0423), MVLT ♂ 11 August 1984, KGMB, det. JPOC (NMI). **DUBLIN: Lucan** (O0235) [R. Liffey], adult 25 August 1888, [JJFXK], Mosely Bequest (BMNH); **R. Liffey** (O0235), Lucan Demesne, adult 15 September 1946, JRH. **KERRY: Doolough** (V9585), LT 3♂♂ 26 August 1987, JPOC/MAOC, det. JPOC; **Killarney**, ♂♀ 27a June, ♀ 28 June, ♂ 1 July & ♀ 19 July 1887, JJFXK, conf. JPOC (NMI); **L. Garragarry** (V9983), larvae June 1974, IDW; **L. Guitane** (W0185), larvae, June 1974, IDW; **L. Leane** (V9686), steps below Muckross peninsula, larvae June 1974, IDW, (V9489), Ross Bay, Cherry Point, larvae, June 1974, IDW; **Muckross Lake** (V9485), LT ♂♂♀♀ 27-28 July 1973, JPOC (NMI), (V9685), Goleen, larvae, June 1974, IDW; **R. Laune** (V8991), Laune Bridge, larvae June 1974, IDW; **stream** (Q8905), entering Maine R., ♂ pupa 7 July 1973, JPOC. **KILDARE: R. Liffey** (N8827), Clane, 3♂♂5♀♀ 22 July 1972, JPOC; **Robertstown** (N7825) [Grand Canal], MVLT ♂ 3 July 1977, MDCW, det. JPOC. **KILKENNY: R. Nore** (S6337), Inistioge, ♂♀ 10 July 2014, 5♂♂4♀♀ 21 July 2015 (NMI), JPOC/MAOC, det. JPOC. **LIMERICK: Mulkear R.** (R6754), ♂♂ 16 July 1984, B. F. Arthure, conf. JPOC (NMI); **R. Shannon** (R6663), Castleconnell, LT 35♀♀ 12-13 July 1973, JPOC. **MONAGHAN: Emyvale** (H6843), adult, KJM (NMS); **Glasslough** (H7241), adult, KJM (NMS); **L. Monalty** (H8602), ♂♂ 3 August 1980, KGMB, det. JPOC (NMI). **OFFALY: Clorhane** (M9827), ♂♂ 19 September 1996 (NMI), ♂ 14 June 1984, KGMB, det. JPOC. **ROSCOMMON: L. Key** (G8205), ♂2♀♀pupae 18 July 1972, AFF, det. JPOC. **TIPPERARY: R. Shannon** (R7073), Killaloe, dredge larva 13 July 1972, AFF, det. JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], adult, JJFXK (NMS), adults 6 July & 12 July, 18 August 1888, [JJFXK], Mosely Bequest (BMNH). **WEXFORD: Oaklands Wood** (S7125), artificial lake, ♂ 8 July 2014, JPOC; **R. Slaney** (S9738), Enniscorthy, ♂ 27 July 2015, JPOC/MAOC, det. JPOC.

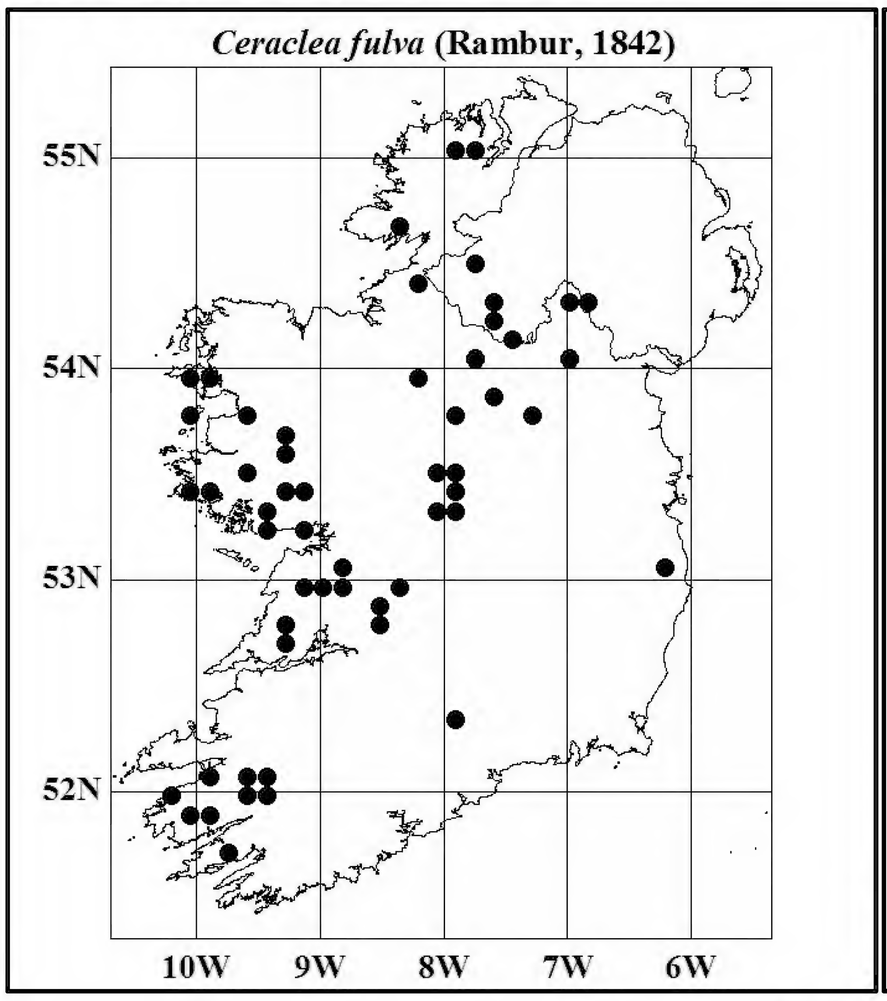
135. *Ceraclea fulva* (Rambur, 1842)

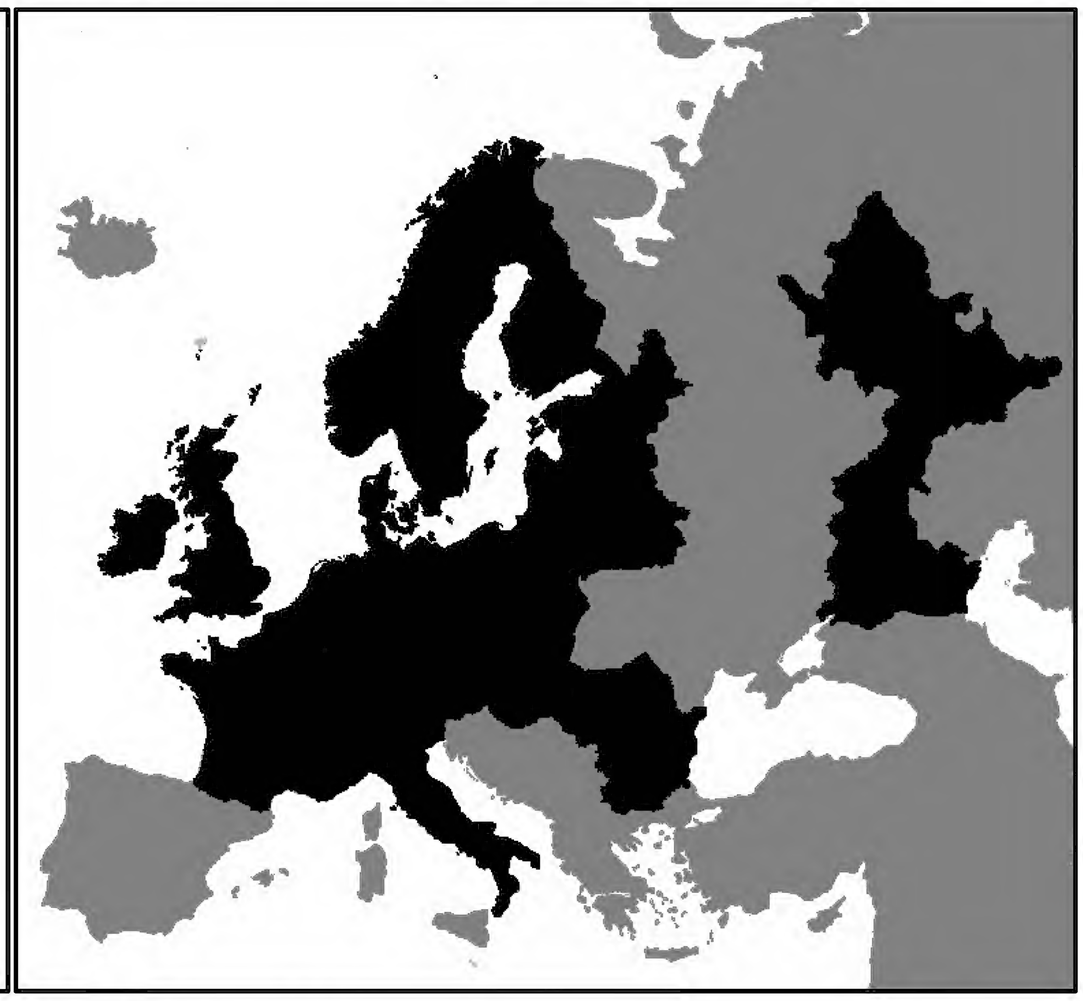
Ceraclea fulva is widely distributed in Ireland. The cased larvae inhabit lakes and rivers where they feed on freshwater sponges. The case is composed of a translucent, flexible material and sponge spicules. Pieces of living sponge may be attached. The species is widespread in much of Europe.

Flight period: June–September (11 June–24 September).

Counties and 10km squares: Clare, Cavan, Donegal, Fermanagh, Galway, Kerry, Leitrim, Limerick, Longford, Mayo, Monaghan, Roscommon, Tipperary, Westmeath, Wicklow (15/32). The species is known from fifty-five 10km squares (55/1019).

FIGURES 322-323. Known Irish and European distributions of *Ceraclea fulva*.





Published records

Morton, 1887b as *Leptocerus fulvus* (**MONAGHAN:** Glasslough (H7241)). *King, 1888a* as *Leptocerus fulvus* (**GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Cloghereen (V9787); Denough [Deenagh] R. (V9792); Gap of Dunloe (V8787); Garagarry Laogh (V9983); Ross Castle (V9488). **MAYO:** Carrowbeg R. (M0084); Prospect Laogh (L9581). **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan (N0446) [L. Ree]; Hare Island (N0446) [L. Ree]; Shannon (N0243)). *Morton, 1892b* as *Leptocerus fulvus* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* as *Leptocerus fulvus* (**DONEGAL:** Loughs Fern (C1824) and Sproule (C1018). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Maumwee [L. Manwee] (L9748). **KERRY:** Cloghereen (V9787); Deenagh R. (V9792); Gap of Dunloe (V8787); Garagarry L. (V9983); Ross Castle (V9488). **MAYO:** Carrowbeg R. (M0084); Prospect L. (L9581). **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan (N0446) [L. Ree]; Hare Island (N0446) [L. Ree]; Shannon (N0243)). *Halbert, 1912* as *Leptocerus fulvus* (**MAYO:** Achill Island (F6405); Westport (L9984)). *Mosely, 1927* as *Leptocerus fulvus* (**GALWAY:** Inverin (M0822)). *Anon., 1929* as *Leptocerus fulvus* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* as *Leptocerus fulvus* (**GALWAY:** Cashel Bay (L7942); Inverin (M0822); Oughterard (M1343)). *Mosely, 1939* as *Leptocerus fulvus* (**GALWAY:** Oughterard (M1343)). *Hickin, 1967* as *Athripsodes* (**GALWAY**). *Moriarty, 1973a* as *Athripsodes* (unsafe larval identification (Wallace, pers. comm.)).

Moriarty, 1974 as *Athripsodes* (unsafe larval identification (Wallace, pers. comm.)). *Speight, 1977 as Leptocerus* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan (N0446)]; Hare Island (N0446)). *Moriarty, 1978* as *Athripsodes* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *O'Connor and Bracken, 1980a* as *Athripsodes* (**CAVAN:** L. Sillan [H7007], adults. **WICKLOW:** L. Dan (O1502), adults). *Wallace, 1981* (**CAVAN**. **CLARE**. **KERRY**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V9191); Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 2 out of 207 river sites). *Donohue et al., 2009* (**IRELAND**). *Atalah et al., 2010* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**CLARE:** upland lake (R5088), 273m. **GALWAY:** lowland lake (M0929)). *Little and Free, 2013* (**CAVAN:** L. Gowna (N2889). **DONEGAL:** Namanfin [lake top of Corker R. near Ardara] (G7983). **GALWAY:** Glenicmurren [Glenicmurrin] L. (M0031); L. Anaserd (L6044). **KERRY:** Glanmore Lake (V7755); L. Nakirka (V7389). **LEITRIM:** Garadice L. (H1911); Glenade L. (G8246). **LONGFORD:** L. Forbes (N0882). **ROSCOMMON:** Cavetown L. (M8397)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686); Muckross Lake (V9685)). *O'Connor, Bond and O'Connor, 2013* (**FERMANAGH:** Upper L. Erne (H3524)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Upper L. Erne (H2731)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Lower L. Erne (H1758); Mill L. (H2438); Upper L. Erne (H2339)).

Unpublished records and voucher specimens

CAVAN: L. Sillan (H7007), ♂ 9 August 1972, JPOC (NMI). **CLARE: Doolough** (R1171), ♂ 9 July 1973, JPOC; **Doonbeg R.** (R1261) [Greygrove R.], ♂ 9 July 1973, JPOC; **L. Derg** (R6878), LT ♂ 2-3 September 1973, (R6979), LTS ♂♂♀ 31 July-1 August & 2♂♂♀ 2-3 September 1973, JPOC, (R7586), Meelick Bay, numerous larvae 19 July 1984, in stomach of eel, C. Moriarty, det. JPOC (NMI), (R6876), north of Killaloe, ♂ 6 August 1986, CM/OSF (SINMNH); **L. Inchiquin** (R2789), ♂ 9 August 2003, LT 2♂♂ 31 August-1 September 1973, JPOC; **R. Fergus** (R3489), ♂ pupa 11 July 1973, JPOC. **DONEGAL: Kilmacrenan** (C1420), adults 23 June 1891, Harwood Coll. (BMNH), also adult 22 June 1891 (TMM). **FERMANAGH: Upper L. Erne** (H3524), Crom Estate, LT 2♂♂ 24 September 2013, KGMB, det. JPOC (NMI), (H2731), Knockninny near Derrylin, ♂♀ 27 August 2014, MAOC, det. JPOC (NMI). **GALWAY: Cashel Bay** (L7942), Connemara, ♂ 6-16 September 1929, MEM (BMNH); **Garryland Wood** (M4103), ♂ pupa 25 June 1977, KP, det. JPOC; **Inverin** (M0822), adults 26 July-6 September 1929, MEM (BMNH); **L. Corrib** (M1745), adults July-September 1964, MK, (M2642), Keekill, LT ♀ 2 August 2003,

KGMB, det. JPOC; **L. Maumwee** [Manwee] (L9748), larvae 1996/1997, JW; **Oughterard** (M1343), adults 3-9 August 1926, MEM (BMNH). **KERRY: Doolough** (V9486), east end, larvae June 1974, IDW; **Killarney**, adult 28 June 1887, [JJFXK] (BMNH), 2♂♂ 27a June 1887, JJFXK, conf. JPOC (NMI), 2♂♂ August (NMS); **L. Derriana** (V6573), ♂ 26 August 1973, JPOC; **L. Garragarry** (V9983), larvae June 1974, IDW; **L. Guitane** (W0185), larvae, June 1974, IDW; **L. Leane** (V9489), Ross Bay, Cherry Point, larvae, June 1974, IDW, (V9686), steps below Muckross peninsula, larvae June 1974, IDW; **Meeting of the Waters** (V9385), Killarney, in fast flowing water, larvae June 1974, IDW; **Muckross Lake** (V9685), Goleen, larvae and pupae June 1974, IDW; **R. Cummeragh** (V5872), ♂ 6 July 1973, JPOC; **R. Ferta** (V5282), ♂ 6 July 1973, JPOC. **LIMERICK: R. Shannon** (R6666), ♂ pupa 13 July 1972, AFF, det. JPOC. **LONGFORD: R. Shannon** (N0332), ♂2♀♀ pupae 13 July 1972, AFF, det. JPOC. **MAYO: Sraheens L.** (F7100), Achill, ♂ June 1909, conf. JPOC (NMI); **Clare Island** (L6985), MT ♂♀ 11 June 1998, SF, conf. JPOC (NMI); **L. Carra** (M1673), adults July-September 1964, MK; **L. Mask** (M1259), (M1465), adults July-September, MK. **MONAGHAN: Emyvale** (H6843), 4♂♂ 20-30 July [1885-6] (NMS); Glasslough (H7241) 2♂♂ 10 August 1887 (NMS). **ROSCOMMON: L. Key** (G8205), larva 18 July 1972, AFF, det. JPOC; **R. Shannon** (M9830), 3♂♂ pupae 13 July 1972, AFF, det. JPOC, (N0243), between L. Ree and Athlone, larva 14 July 1972, AFF, det. JPOC. **TIPPERARY: R. Suir** (S0424), Cahir, ♀ 3 August 1986, CM/OSF (SINMNH). **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 13 August & ♂ 14 August 1888, JJFXK, conf. JPOC (NMI), ♂ 2 August 1888, JJFXK, conf. JPOC (NMS); **L. Ree** (M2925), Nun's Island, dredge larva 14 July 1972, AFF, det. JPOC; **L. Sheelin** (N4381), Goreport, ♂ 22 September 1973, JPOC; **R. Shannon** (N0538), ♂4♀♀ pupae 13 July 1972, (N0440), dredge ♂3♀♀ 13 July 1972, AFF, det. JPOC. **WICKLOW: L. Dan** (O1502), 2♂♂4♀♀ 16 August 1972, JPOC.

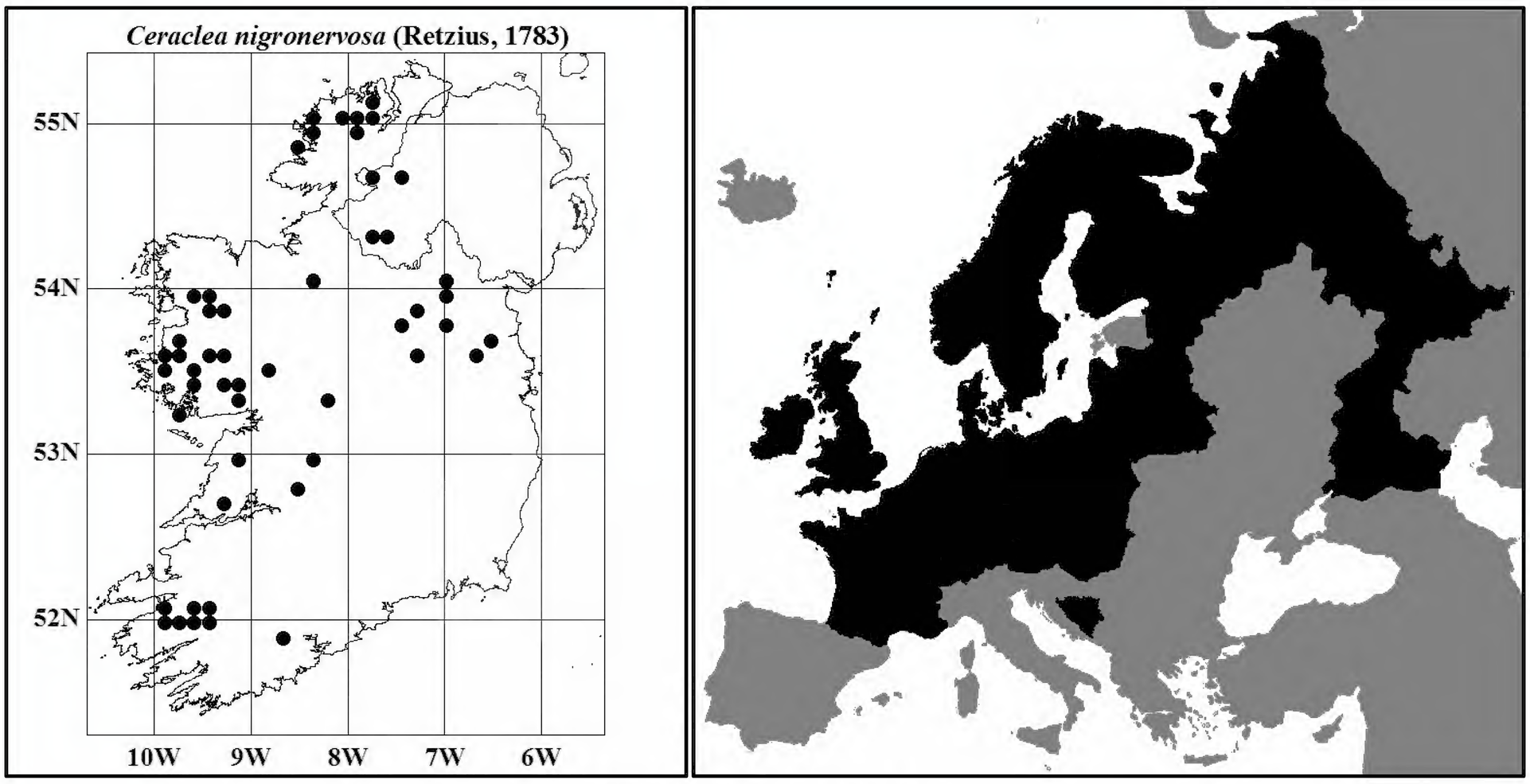
136. *Ceraclea nigronervosa* (Retzius, 1783)

Ceraclea nigronervosa is widely distributed in Ireland with the exception of the south-east and north-east. The cased larvae inhabit lakes, reservoirs and rivers where they consume freshwater sponges. The case is composed of a tough but flexible material reinforced with bands of sand grains. The species is widespread in northern and western Europe.

Flight period: May–August (13 May–27 August) (September). Michael Kennedy found adults in September but no dates were given.

Counties and 10km squares: Cavan, Clare, Cork, Donegal, Fermanagh, Galway, Kerry, Mayo, Meath, Roscommon, Sligo, Tyrone, Westmeath (13/32). The species is known from fifty-one 10km squares (51/1019).

FIGURES 324-325. Known Irish and European distributions of *Ceraclea nigronervosa*.



Published records

Stephens, 1836 as *Ceraclea nervosa* (**KERRY:** in the Reeks Mountains, near Killarney [MacGillycuddy's Reeks (V8185)]). *Hagen, 1860-1861* as *Leptocerus nervosus* Fabricius ([**KERRY**]**:** Killarney (Reek Mountains) (V8184)). *King, 1888a* as *Leptocerus nigro-nervosus* (**KERRY:** Garagarry Laogh (V9983); Ross Castle (V9488)). *King and Halbert, 1910* as *Leptocerus nigro-nervosus* (**DONEGAL:** Gorteen (C0818) and Salt (C1226) Loughs. **KERRY:** Garagarry L. (V9983); Ross Castle (V9488)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Wallace, 1981* (**KERRY**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V9191), (V9290); Muckross Lake; Upper Lake [Killarney]). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 4 out of 70 sampled sites). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 3 out of 207 river sites). *Donohue et al., 2009* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**DONEGAL:** Dunglow L. (B7811); Gartan L. (C0515); Kiltooris Lake (G6795); L. Anure (B8216); L. Veagh [Beagh] (C0121); L. Waskel (B7316). **GALWAY:** Kylemore L. (L7757); L. Ardderry (L9945); L. Corrib (M2541); L. Fee (L7961); L. Hibbert (L8822); L. Maumwee [Manwee] (L9748); L. Maumeen [grid reference L1641 appears to be in the sea and has not been entered]; L. Shindilla (L9946); Nahasleam [L. Aphreaghaun] (L9744); Nambrackkeagh [lake] (L8160). **KERRY:** Cloon L. (V7078). **MAYO:** Beltra L. (M0798); Fin L. (L8465); Glencullin [Glenullin] L. (L8169); L. Feeagh (F9600); L. Mask (M1060)). *O'Connor and Davy-Bowker, 2014* (**FERMANAGH:** R. Arney (H1737); R. Sillees (H2341). **TYRONE:** Fairywater (H3976); R. Derg (H1980)).

O'Connor and O'Connor, 2015b (**FERMANAGH:** Upper L. Erne (H2339)).

Unpublished records and voucher specimens

IRELAND: adult 1866, Hardy (BMNH).
CAVAN: L. Mullagh (N6785), 3♂♂ 20 May 1974, JPOC; **L. Sheelin**, adult 1 June 1946, JRH, (N4686), Crover, 5♂♂♀ 25 May 1972 (NMI), ♂ 17 June 1973, JPOC; **Moyduff Lake** (H6909), 4♂♂ 20 May 1974, JPOC; **R. Annalee** (H7205), below L. Sillan, 2♂♂ 20 May 1974, JPOC. **CLARE: Knockalough** (R1463), ♂ 9 July 1973, JPOC; **L. Derg** (R7071), Killaloe, adult, Farran, det. JRH, (R7186), Mount Shannon, adult, JRH; **L. Inchiquin** (R2789), ♂ 4-6 June 1972, JPOC (NMI). **CORK: Inniscarra Reservoir** (W5172), larva 8 November 1968, TC, det. JPOC. **DONEGAL: Kilmacrenan** (C1420), adults 22 June 1891, Harwood Coll. (BMNH), also adult 22 June 1891 (CTHM). **FERMANAGH: Upper L. Erne** (H2339), Bellanaleck, 3♂♂ 14 May 2015, JPOC/MAOC, det. JPOC (NMI). **GALWAY: L. Corrib** (M1745), adults May-September, MK, (M2531), Lower, ♂ 19 May 1980, BC, conf. JPOC (NMI); **R. Clare** (M4149), larvae 2 September 1980, LW, det. JPOC (NMI). **KERRY: L. Guitane** (W0285), 2♂♂ 3 July 1973, JPOC (NMI), (W0185), larvae, June 1974, IDW; **L. Lauscaunagh** (V8879), ♂♂ 22 May 2001, JPOC (NMI); **L. Leane**, (V9291), Golf Course, 3♂♂ 29 May 1974, (V9686), boat house, 6♂♂ 28 May 1974, JPOC, (V9489), Ross Bay, Cherry Point, larvae, June 1974, IDW; **L. Nakirka** (V7389), 2♂♂ 27 August 1973, JPOC; **Muckross Lake** (V9685), Goleen, 3♂♂ 28 May 1974, JPOC, larval cases, June 1974, IDW; **R. Flesk** (V9890), Flesk Bridge, ♂ 25 May 1995, JPOC; **R. Laune** (V8991), Laune Bridge, larvae June 1974, IDW; **Upper Lake, Killarney** (V9383), Long Range, 4♂♂♀ 29 May 1974, JPOC, (V9282), ♂♂ 29 May 1974, JPOC (NMI). **MAYO: Castlebar** [lakes] (M0988), (M1188), (M1190), (M1389), adults May-September, MK; **L. Corrib** (M2341), Middle, ♂ 19 May 1980, BC, conf. JPOC (NMI); **L. Mask** (M1259), (M1465), adults May-September, MK; **R. Clare** (M4149), larvae 2 September 1980, LW, det. JPOC (NMI). **MEATH: R. Boyne** (O0373), Donore, adult 13 May 1946, JRH, (N8660), Bective, 2 larvae 5 September 1988, MFOG, det. JPOC, (N8659), larvae 5 September 1988, DAG/JML, det. JML. **ROSCOMMON: R. Suck** (M8826), Culliagh, larva 15 October 1981, TC, det. JPOC. **SLIGO: L. Arrow** (G7711), ♂♂ June 1909, det. MEM (BMNH, RSM). **WESTMEATH: L. Derravaragh** (N4663), ♂ 17 May 1972, JPOC; **L. Sheelin** (N4281), Bog Bay, ♂ 17 June 1973, JPOC.

137. *Ceraclea senilis* (Burmeister, 1839)

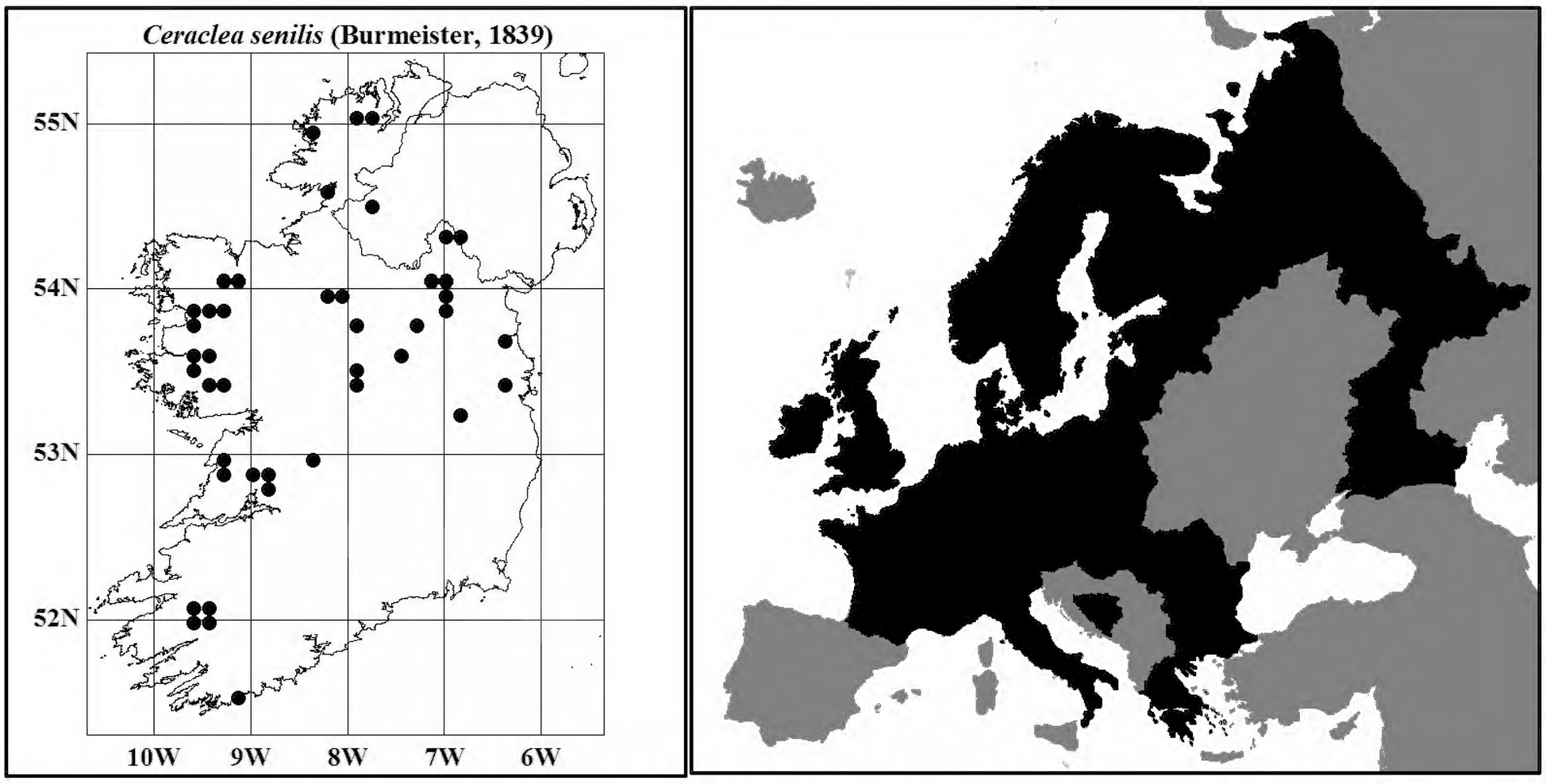
Ceraclea senilis is widely distributed in Ireland with the exception of the south-east and north-east. The cased larvae inhabit canals, lakes and rivers where they consume freshwater sponges. The case is composed of a translucent and flexible secreted material and sponge spicules. Sometimes, pieces of living sponge are attached. The species is widespread in much of Europe.

Flight period: (May) June–October (22 June–8 October). Michael Kennedy reported

adults in May.

Counties and 10km squares: Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Leitrim, Longford, Louth, Mayo, Monaghan, Roscommon, Westmeath (16/32). The species is known from forty-three 10km squares (43/1019).

FIGURES 326-327. Known Irish and European distributions of *Ceraclea senilis*.



Published records

King, 1888a as *Leptocerus* (**GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **KERRY:** Coppagh Glen (W0382); Denough [Deenagh] R. (V9792); Ross Castle (V9488). **MAYO:** Knappagh [Knappaghbeg] (M0080) and Prospect (L9581) Laoghs; Newport R. (L9994). **WESTMEATH:** Coosan (N0446) [L. Ree]; Shannon (N0243); Twy [Breensford] R. (N0943)). *King and Halbert, 1910* as *Leptocerus* (**CORK:** Glandore (W2235). **DONEGAL:** Clonkillybeg [L.] (C1219); Coolmore (G8566); Loughs Fern (C1824) and Sproule (C1018). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **KERRY:** Coppagh Glen (W0382); Deenagh R. (V9792); Ross Castle (V9488). **MAYO:** Knappagh [Knappaghbeg] (M0080) and Prospect (L9581) Loughs; Newport R. (L9994). **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **WESTMEATH:** Coosan (N0446) [L. Ree]; Hare Island (N0446) [L. Ree]; Shannon (N0243)). *Halbert, 1912* as *Leptocerus* (**MAYO:** Newport (L9893); Westport (L9984)). *Moriarty, 1972a* as *Athripsodes* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1973a* as *Athripsodes* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1974* as *Athripsodes* (unsafe larval identification (Wallace, pers. comm.)). *Speight, 1977* as *Leptocerus* (**WESTMEATH:** Coosan Lake [Coosan (N0446)]). *Moriarty, 1978* as *Athripsodes* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* as *Athripsodes* (**CAVAN:** L. Sillan [H6910], adults). *Wallace, 1981* (**CLARE**. **KERRY**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe,*

O'Connor and Murray, 1998 (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Donohue et al., 2009* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**DONEGAL:** Dunglow L. (B7811). **GALWAY:** L. Bofin (M0344); L. Nafooey (L9759). **MAYO:** Carrowkeribly [Ballycong L.] (G2611). **ROSCOMMON:** Cavetown L. (M8397)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Lower L. Erne (H1758)).

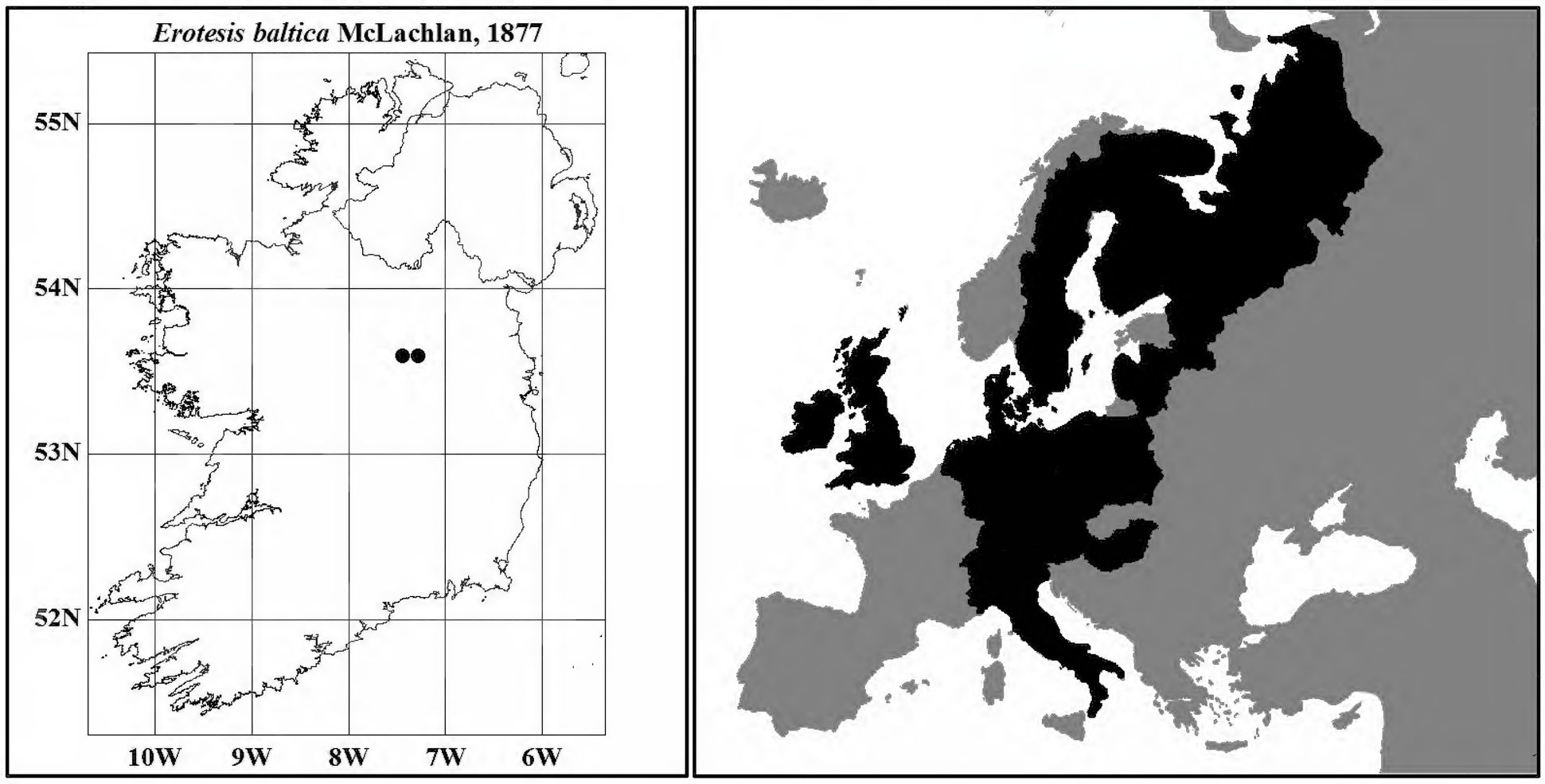
Unpublished records and voucher specimens

WEST IRELAND: ♂ 1886, JJFXK, conf. JPOC (BMNH).

CAVAN: L. Cuilcagh (N6389), 2♂♂ 10 August & ♂2♀♀ 2 October 1972, JPOC; **L. Sheelin** (N4785), Mount Nugent, ♀ 1 August 1986, CM/OSF (SINMNH); **L. Sillan** (H6910), ♂ 27 July 1972, JPOC (NMI); **R. Annalee** (H6806), above L. Sillan, ♂ 27 July 1972, JPOC; **Town Lake** (H6014), Cootehill, adult, JRH. **CLARE: Lickeen pond** (R1891), ♂ 10 July 1973, JPOC; **L. Derg** (R7586), Meelick Bay, larva 19 July 1984, in eel stomach from 10-15m, C. Moriarty, det. JPOC (NMI); **L. Moghna** (R1384), 9♂♂ 9 July 1973, JPOC; **L. Teereen** (R4671), LT 3♂♂ 11-12 July 1973, JPOC; **O'Brien's Big Lake** (R4182), ♂ 11 July 1973, JPOC; **R. Fergus** (R3480), Ennis, ♂ 11 July 1973, JPOC. **DONEGAL: Kilmacrenan** (C1420), adult 6 July 1891, JJFXK (TMM) (per IDW). **DUBLIN: Royal Canal** (O0838), Blanchardstown, 3♂♂ 15 August 1976, JPOC (NMI). **FERMANAGH: Lower L. Erne** (H1758), near White Cairn, Castle Archdale County Park, 2♂♂ 1 September 2015, JPOC/MAOC, det. JPOC (NMI). **GALWAY: L. Corrib** (M1745), adults May-June 1964, MK; **L. Mask** (M0957), Kilbeg Lower, LT 3♀♀ 16 August 2014, MG; **Ma'am** [Maam] (L9653), ♂, JJFXK, conf. JPOC (NMI). **KERRY: Killarney**, ♂♂ 25a June, 28 June & 30 June, 4 July & 2 August 1887, JJFXK, ♂ conf. JPOC (NMS), ♂ 25a June, ♂ 27a June, 2♂♂ 28 June, ♂ 30 June & ♂ 2 July 1887, JJFXK, conf. JPOC (NMI). **KILDARE: Grand Canal** (N8125), Bonynge Bridge, 2♂♂ 3 July 1977, KP, det. JPOC. **LEITRIM: L. Corry** (M9497), dredge ♂ pupa 19 July 1972, AFF, det. JPOC. **LONGFORD: R. Shannon** (N0684), north of L. Forbes, 5♂♂♀ 16 July 1978, JPOC. **LOUTH: Drogheda** (O0775) [R. Boyne], (O0776), Mell landfill site, adults 8 October 2008, R. Anderson (CEDaR). **MAYO: Castlebar Lakes** (M0988), (M1188), (M1190), (M1389), adults May-July 1964, MK; **L. Conn** (G1516), adults May-July 1964, MK. **MONAGHAN: L. Moylemuck** (H6415), ♂♀ 27 July 1972, JPOC (NMI). **ROSCOMMON: R. Shannon** (N0243), above Athlone, larva 17 July 1972, AFF, det. JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 13a August, 2♂♂ 15 August & ♂ 20a August 1888, JJFXK, conf. JPOC (NMI), adult 15 August 1888, [JJFXK], Harwood Coll. (BMNH); **Ballynafid Lake** (N4160), ♂ 22 June 1989, JPOC.

138. *Erotesis baltica* McLachlan, 1877

FIGURES 328-329. Known Irish and European distributions of *Erotesis baltica*.

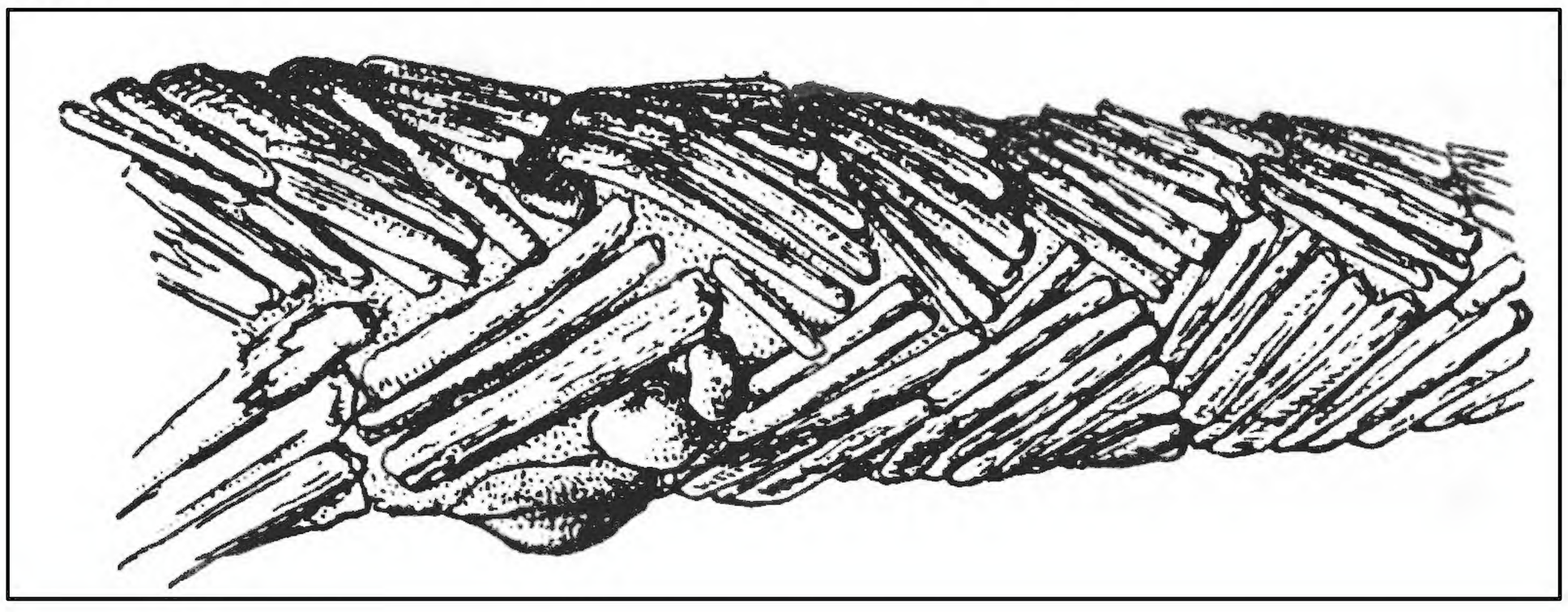


Erotesis baltica is a local Irish species, having been found only in Scragh Bog, County Westmeath. The cased larvae were discovered amongst the vegetation in pools and hollows in the bog which is a nature reserve. The site is the best example in Ireland of the transition from alkaline fen to acidic raised bog and one of the few remaining such habitats in Europe. When full-sized, the larval case is almost straight and composed of pieces of plant material. These are arranged distinctively in opposing spirals which meet in a zigzag line along the middle of the dorsal and ventral edges (Fig. 330). The larvae are shredders. The species has a limited European distribution. It is under threat in many countries (Hannigan, Kelly-Quinn and O'Connor, 2009).

Flight period: August (25 August). Irish adults have only been taken on one occasion. Barnard and Ross (2012) give the British flight period as June–September.

County and 10km squares: Westmeath (1/32). The species is known from two 10km squares (2/1019).

FIGURE 330. The larval case of *Erotesis baltica* (after Lepneva, 1966).



Published records

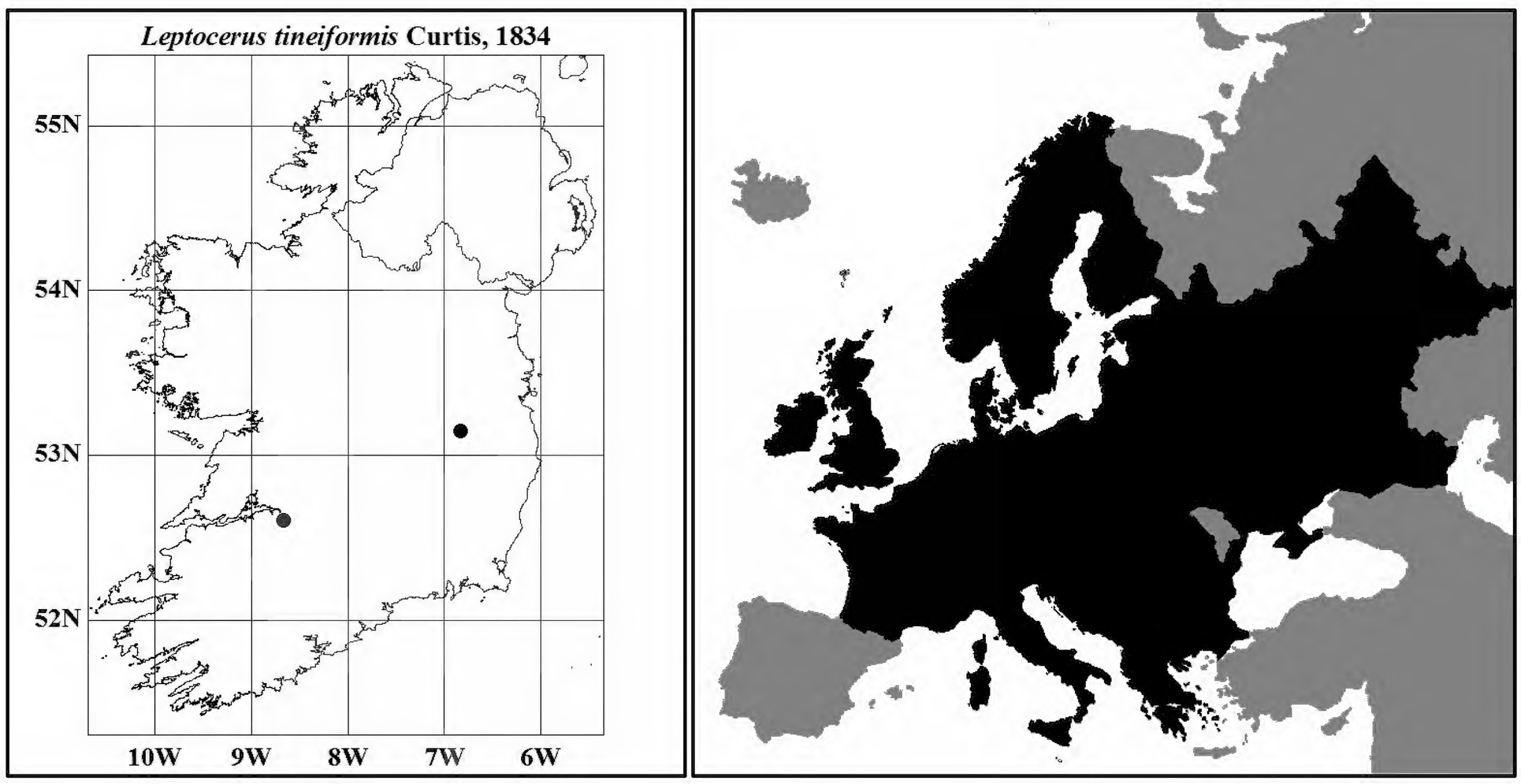
Hannigan, Kelly-Quinn and O'Connor, 2009 (**WESTMEATH:** Scragh Bog (N4259)). *Hannigan and Kelly-Quinn, 2012* (**WESTMEATH:** Scragh Bog (N4357), pools and hollows). *O'Connor and Nelson, 2012* (**WESTMEATH**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

WESTMEATH: Scragh Bog (N4259), 10 larvae August 2006 & Spring 2007, coll. and det. EH, conf. JPOC, 5♂♂♀ 25 August 2008, EH, det. JPOC (NMI).

139. *Leptocerus tineiformis* Curtis, 1834

FIGURES 331-332. Known Irish and European distributions of *Leptocerus tineiformis*.

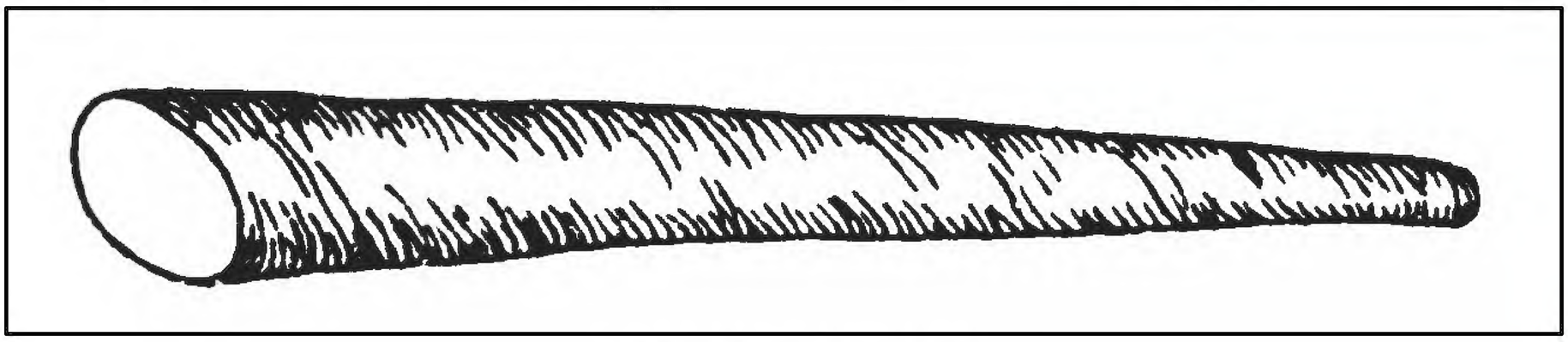


Leptocerus tineiformis is a local and rare Irish species. In Britain, the cased larvae occur in canals, lakes and ponds (Barnard and Ross, 2012). In Ireland, the species has only been found at a fen and in a lake. Pollardstown Fen, County Kildare, where the adult was light-trapped, consists of 150ha and is the best developed fen in Ireland (O'Connor, Good and Bond, 1990). In County Limerick, a larva was found in Bunlicky Lake which was created by the flooding of pits from which clay had been formerly extracted for use in a cement production process (Sweeney, 2006). The case is almost straight and made from a translucent secreted material (Fig. 333). It is light-weight, allows the larva to swim easily between the stems of macrophytes on which it feeds. The larvae are both grazers and shredders. The species is widespread in Europe.

Flight period: July (22 July). Only one Irish adult has been collected. Barnard and Ross (2012) give the British flight period as June–August.

Counties and 10km squares: Kildare, Limerick (2/32). The species is known from two 10km squares (2/1019).

FIGURE 333. The larval case of *Leptocerus tineiformis* (after Lepneva, 1966).



Published records

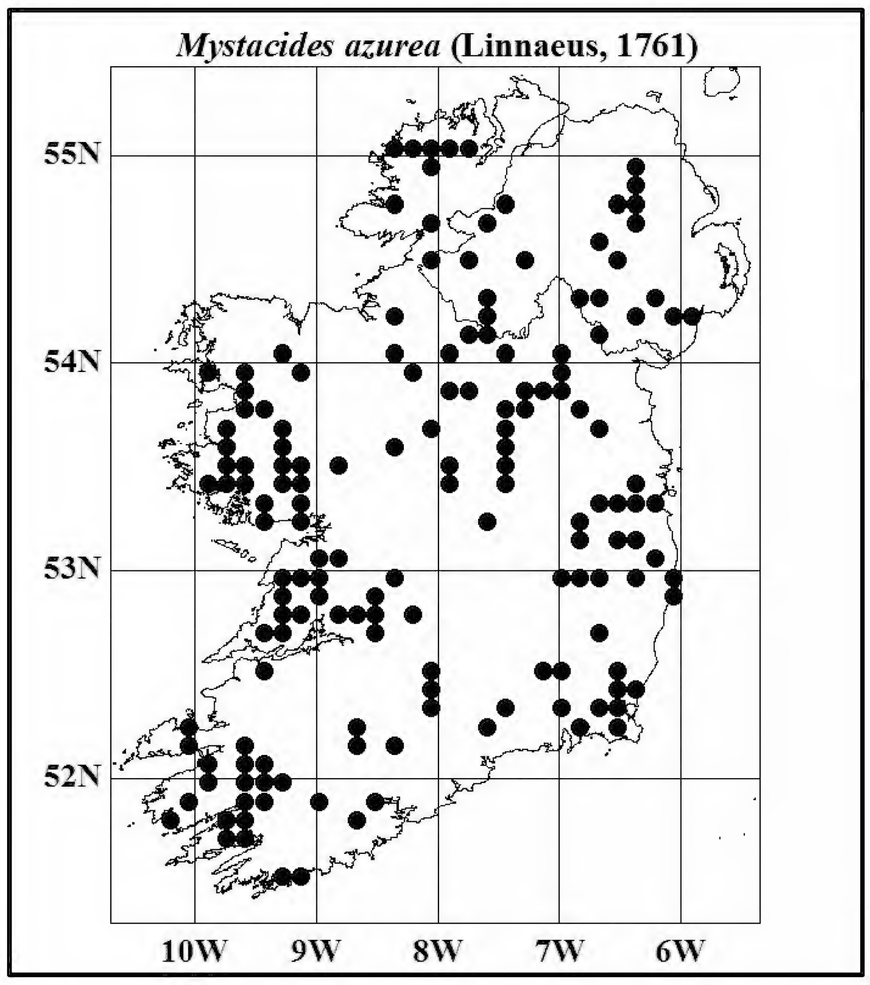
O'Connor, Good and Bond, 1990 (**KILDARE:** Pollardstown Fen (N7715)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Reynolds et al., 1998* as *Leptocerus tineiformes* (**KILDARE:** Pollardstown (N7715)). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Sweeney, 2006* (**LIMERICK:** Bunlicky Lake (R5455)). *O'Connor and Nelson, 2012* (**KILDARE**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

KILDARE: Newbridge (Pollardstown) Fen (N7715), LT ♀ 22 July 1989, JAG/KGMB, det. JPOC (NMI). **LIMERICK: Bunlicky L.** (R5455), larva 17 September 2001, PS, conf. JPOC (NMI).

140. *Mystacides azurea* (Linnaeus, 1761)

FIGURES 334-335. Known Irish and European distributions of *Mystacides azurea*.



Mystacides azurea is a widely distributed and very common species in Ireland. The adults often appear in huge swarms in the evening. Mosely (1930) reported a variety with unicolorous white antennae (var. *albicornis*) from a lake in the west of Ireland. The cased larvae occur in canals, lakes, ponds, reservoirs and rivers. The case is straight or slightly curved, composed of sand grains often with added plant fragments. The larvae are omnivorous. The species is widespread in Europe.

Flight period: May–October (19 May–11 October).

Counties and 10km squares: Antrim, Armagh, Carlow, Cavan, Clare, Cork, Derry,

Donegal, Down, Dublin, Fermanagh, Galway, Kerry, Kildare, Kilkenny, Leitrim, Limerick, Longford, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Tyrone, Waterford, Westmeath, Wexford, Wicklow (30/32). The species is known from 158 10km squares (158/1019).

Published records

King, 1888a (**DUBLIN:** Lucan Demesne (O0235) [R. Liffey]; Tolka [R.] (Glasnevin) (O1337). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Ardagh Laogh (V9888); Denough [Deenagh] R. (V9792); Dinish (V9385); Horses' Glen (V9981); Ross Castle (V9488). **MAYO:** Bleachyard (L9994), Doo (L8368), Kip (M0880), Knappagh [Knappaghbeg] (M0080), Mount Brown [Kinlooey] (M0381) and Prospect (L9581) Laoghs; Carrowbeg (M0084) and Newport (L9994) Rivers. **WESTMEATH:** Coosan Point (N0446) [L. Ree]). *Morton, 1892b* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* (**ARMAGH:** Coney Island (H9364) and Maghery (L. Neagh) (H8342). **CORK:** Glandore (W2235); Mallow (W5598) [R. Blackwater]. **DONEGAL:** Ardara (G7390) [Owntocker R.]; Kilmacrennan district (C1420) [Leannan R.]. **DUBLIN:** Lucan demesne (O0235) [R. Liffey]; Glasnevin (R. Tolka) (O1337). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Maumwee [Manwee] L. (L9748). **KERRY:** Killarney district; Loo Bridge (W0881) [on the upper R. Flesk], etc. **MAYO:** Newport (L9893) and Westport (L9984) districts. **MONAGHAN:** Glaslough (H7241). **WESTMEATH:** Coosan Point (N0446) [L. Ree]. **WEXFORD:** Edenvale (T0427) [R. Sow]; Johnstown Castle (T0216) [small lakes]). *Halbert, 1912* (**MAYO:** Newport (L9893); Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822)). *Mosely, 1930* as *Mystacides azurea* var. *albicornis* (**GALWAY:** Cashel (Cassel misprint) Bay (L7942)). *Kimmins, 1932* (**GALWAY:** Leenane [Leenaun] (L8762)). *Beirne, 1939* (**CORK:** Ballyhooly (W7298) [R. Blackwater]. **KERRY:** Flesk, Killarney (V9689)). *Beirne, 1941* (**KERRY:** Flesk, Killarney (V9689)). *Frost, 1942* (**KILDARE:** Straffan (N9229) [R. Liffey]). *Beirne and Harris, 1946* (**DUBLIN:** Lucan (R. Liffey) (O0335)). *Partridge and Foy, 1972* (**MAYO:** L. Feeagh (F9600), (F9601), (F9602)). *Fahy, 1972a* (**TIPPERARY:** (R9930)). *Moriarty, 1972a* (**GALWAY:** L. Corrib (M1244), (M1445)). *Moriarty, 1973a* (**CLARE:** L. Derg (R6070). **GALWAY:** L. Corrib (M0050), (M1040) = [M1249], (M2030) = [M2434]. **MAYO:** L. Conn (G1010) = [G1511]. **ROSCOMMON:** L. Key (G8000) = [G8304]. **SLIGO:** L. Gill (G7030) = [G7232]). *Moriarty, 1973b* (**MAYO:** L. Conn (G1511). **SLIGO:** L. Gill (G7232)). *Moriarty, 1974* (**CLARE:** L. Derg (R6978); L. Inchiquin (R2789). **ROSCOMMON:** L. Key (G8304). **UNKNOWN COUNTIES:** waters upstream of L. Derg). *O'Connor and Norton, 1977* (**WESTMEATH:** Hare Island, L. Ree (N0446); L. Coosan (N0544)). *Speight, 1977* (**WESTMEATH:** Coosan Lake [Coosan (N0446)]). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and*

Malicky, 1978 (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H7007), (H7106), (H6906). **WICKLOW:** L. Dan (O1502)). *Wise and O'Sullivan, 1980* (**KERRY:** L. Leane (Ross Bay (V9488))). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7186)). *Wallace, 1981* (**KERRY**. **WICKLOW**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9490), (V9686); Muckross Lake (V9385); Upper Lake [Killarney] (V8981), (V9181)). *Murphy and Carter, 1984* (**ANTRIM:** L. Neagh (J0485)). *Dauod, Bolger and Bracken, 1986* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *O'Connor, 1987* (**IRELAND:** widespread). *Bracken and Dauod, 1990* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Carter and Murphy, 1993* (**IRELAND:** L. Neagh). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wright et al., 2000* (**NORTHERN IRELAND:** 10 out of 70 sampled sites). *Sleeman, 2002* (**CORK:** R. Bandon, Inishannon (W5456)). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 16 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *Atalah et al., 2010* (**IRELAND**). *Anon., 2011* (**WEXFORD:** R. Slaney (S9830)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**GALWAY:** lowland lakes (M0329), (M0229), (M0927), (M0927)). *Little and Free, 2013* (**CLARE:** Finn L. (R4370); L. Acrow (R1968); L. Cullaun (R3290); Muckanagh L. (R3792). **DONEGAL:** Keel [Red Water] L. (B8416); L. Anure (B8216); L. Barra (B9312); L. Eske (G9783); L. Golagh (G9665); L. Veagh [Beagh] (C0121); L. Waskel (B7316. **GALWAY:** Derryclare (L8248); Glenicmurren [Glenicmurrin] L. (M0031); Loghanillaun (L8441); L. Ardderry (L9945); L. Nashasleam [Aphreaghaun] (L9744); Nambrackkeagh [lake] (L8260); Oorid L. (L9346). **KERRY:** Cloonaghlin L. (V6070); Clonee L. (middle) (V8164); Glanmore Lake (V7755); L. Caragh (V7190); L. Nakirka (V7389); Upper Lake, Killarney (V9282). **LEITRIM:** Drumlaheen L. (H0906); L. Boderg (N0291); L. Bofin (N0489); L. Sallagh (N1691). **MAYO:** Fin L. (L8465); Glencullin [Glenullin] L. (L8169). **WATERFORD:** Coumduala L. (S2914). **WESTMEATH:** Coosan L. (N0544)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Galey (R0139)). *O'Connor and Hancock, 2014* (**DOWN:** R. Shimna (J3631); R. Burren (J3533)). *O'Connor and Davy-Bowker, 2014* (**ANTRIM:** R. Braid (D1003); R. Clogh (D0613); R. Main (J0889). **DERRY (LONDONDERRY):** R. Moyola (H9590). **DOWN:** Newry R. (J0730); R. Kinnahalla (J2328); Upper Bann (J1345). **TYRONE:** Eskragh Water (Quiggery Water) (H4763); R. Ballinderry (H8376); R. Derg (H3184); R. Strule (H4186)). *Callanan, Baars and Kelly-Quinn, 2014* (**TIPPERARY:** R. Tar (R9416), (R9617)). *Baars et al., 2014* (**IRELAND:** recorded in 5 of 12 upland peatland lakes). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Lower L. Erne (H1758); Upper L. Erne (H2339)). *Anon., 2015a* (**CORK:** Glengarriff

Nature Reserve (V9256). **GALWAY:** L. Corrib (M2926)). *Anon., 2015b* (**CAVAN:** Annagh L. (H2919)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** R. Erne (H2637); Upper L. Erne (H2731)).

Unpublished records and voucher specimens

ARMAGH: L. Neagh (H8342), Maghery, 2♂♂ 4 August 1890, WFJ, conf. JPOC (NMI). **CARLOW: Bahana Woods** (S7239), ♂ 14 June 1991, JPOC/MAOC, det. JPOC; **R. Barrow** (S7238), St Mullins, ♀ 15 August 1994, JPOC/MAOC, det. JPOC, lockhouse, ♂ 30 July 2015, MAOC, det. JPOC, (S7043), Tinnahinch, dead inside a light-fitting on a bridge, ♂ 21 August 1996, JPOC; **R. Slaney** (S9161), Clonegal, adult 31 August 1946, JRH; **stream** (S7439), St Mullins, ♂ 17 June 1991, JPOC. **CAVAN: L. Brackley** (H1921), ♂ 4 August 1973, JPOC; **L. Cuilcagh** (N6389), 2 larvae sheltered rocky shore, 29 March 1973, JPOC; **L. Oughter** (H3308), larva 1996/1997, JW; **L. Ramor** (N6087), ♂ 2 August 1973, JPOC; **L. Sheelin** (N4686), Crover, adults 22 May 1945, 26 August 1946, JRH, (N4182), near Finnea, ♂ 17 June 1973, (N4786), 3♂♂2♀♀ 5 August 1973, JPOC; **L. Sillan** (H6906), ♀♀ 31 July 1973, (H7106), ♀ August 1971, JPOC; **L. Tacker** (H6908), 10♂♂♀ 1 September 1972, JPOC (NMI); **R. Annalee** (H6810), ♂ 1 September 1972, JPOC. **CLARE: Doolough** (R1171), 19♂♂3♀♀ 9 July 1973, JPOC; **Knockalough** (R1463), 2♂♂ 9 July, 12♂♂7♀♀ 29 August & LT 3♂♂2♀♀ 8-9 July 1973, JPOC; **L. Bunny** (R3796), light-trap 5 August 1969, DWHF (per IDW), ♂2♀♀ 21 May 1985, JPOC/MAOC, det. JPOC, 4♂♂♀ 31 August 1973, JPOC; **L. Cullaun** (R3290), larvae 1996/1997, JW; **L. Derg** (R7186), Mount Shannon, LT 10♂♂10♀♀ 26-27 August 2003, KGMB, det. JPOC, (R6878), ♀ 13 July 1973, (R6979), LT 19♂♂2♀♀ 2-3 September 1973, JPOC; **L. Doon** (R5674), ♂ 12 July 1973, JPOC; **L. Inchiquin** (R2789), 18♂♂8♀♀ 4 June & ♂ 4-6 June 1972 (NMI), JPOC, larvae 1996/1997, JW; **L. Moghna** (R1384), 2♂♂ 9 July & 11♂♂9♀♀ 30 August 1973, JPOC; **R. Creegh** (Q9966), ♂ 29 August 1973, JPOC; **R. Denlagh** (R1191), 3♂♂ 30 August 1973, JPOC; **R. Fergus** (R3478), Ennis, 3♀♀ 2 September 1973 (NMI), LT 6♂♂11♀♀ 31 August-1 September 1973, JPOC, (R2688), below L. Inchiquin, ♂ 1 September 1973, JPOC. **CORK: Ballyhooly** (W7298) [R. Blackwater], adult 18 August 1938, BPB (BMNH); **Buttevant** (R5408) [R. Awbeg], MVLT ♀ 17 August 1995, KGMB; **Cork** (Mardyke) (W6571), ♂♀ 5 September 1985, KGMB, conf JPOC; **Glandore** (W2235), 2♀♀, conf. JPOC (NMI); **Glengarriff Woods** (V9057), ♂ 6 July 1985, JPOC/MAOC, det. JPOC; **Liss Ard House** (W1331), south of Skibbereen, MVLT ♂ 24 August 1991, KGMB, det. JPOC; **L. Abisdealy** (W1331), south of Skibbereen, MVLT ♂ 15-16 August 1992, KGMB, det. JPOC; **Mallow** (W5598) [R. Blackwater], ♂, conf. JPOC (NMI); **The Gearagh** (W3371), adult 22 July 1960, MK, det. JRH. **DONEGAL: Ardara** (G7390) [Owntocker R.], 2♂♂, WFJ, conf. JPOC (NMI); **Glenveagh National Park** (C0423), MVLT ♂ 11 August 1984, KGMB, det. JPOC, (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT ♀ 10-30 July 1998, MCDS, det. JPOC; **Kilmacrenan** (C1420), adult 27 June 1891, anon, det IDW

(CTHM) (per IDW). **DOWN: R. Burren** (J3533), meadows, Castlewellan road, ♀ 10 August 1912, JJFXK, det. JPOC (HMAG); **R. Shimna** (J3631), marshy ground, ♀ 19 July 1912, JJFXK, det. JPOC (HMAG). **DUBLIN: Dublin**, adults 1861, CGB, det. RMCL (BMNH); **R. Dodder**, adult 1 June 1953, R. L. Coe (BMNH), ♂♀, [JNH], det. JPOC (NMI), (O1730), Clonskea [Clonskeagh], adult 9 June 1945, JRH; **R. Liffey** (O0335), Lucan, adults 5 August 1945 & 15 September 1946, JRH, ♂ 18 September 1973, JPOC, (O0635), weir at Wren's Nest, 3♂♂3♀♀ 12 August 2014, JPOC, (O0835), Strawberry Beds 18♂♂3♀♀ 10 July 1972, 13♂♂2♀♀ 31 May 1973, (O0735), Strawberry Beds, 2♂♂♀ 12 August 2014, ♀ 29 August 2015, JPOC; **Royal Canal** (O0838), Castleknock, ♀ 19 June 2014, JPOC, (O0236), Lucan, adult, MK. **GALWAY: Black R.** (M2647), near Headford, adult 20 September 1948, JRH; **Cashel Bay** (L7942), Connemara, adults 6-16 September 1929 (as var *albicornis*), MEM (BMNH); **Hollygrove Lake** [Ballaghdacker L.] (M7857), 2♂♂ 8 August 2001, JPOC; **Inver** (L9139), adult 4 July 1945, JRH; **Inverin** (M0822), adults 17 July-2 August 1926, 26 August-6 September 1929, MEM (BMNH); **Leenane** [Leenaun] (L8762), Connemara, adults 30 August 1930, MEM (BMNH), adult 30 August 1930 (as var *albicornis*), MEM (BMNH); **L. Ballyquirke** (M2331), larva 1996/1997, JW; **L. Corrib** (M1745), adults May-October 1964, MK, (M2531), Lower, ♀ 26 August 1980, BC, conf. JPOC (NMI), (M2341), Middle, ♂ 19 May 1980, BC, conf. JPOC, (M2531), Hurnies, larva 6 July 1983, DOK, det. JPOC, (M2341), Knockferry, LT ♂2♀♀ 21 August 2014, MG/CC, det. MG; **L. Cutra** (R4698), MVLT ♀ 23 June 1996, KGMB, det. JPOC; **L. Maumwee** [Manwee] (L9748), larvae 1996/1997, JW; **Oughterard** (M1343), adult 3 August-9 August 1926, MEM (BMNH); **R. Clare** (M4149), larvae 2 September 1980, LW, det. JPOC; **R. Corrib** (M2925), Nun's Island, ♂ 30 August 1978, DMG, det. JPOC. **KERRY: Crinnagh R.** (V9481), 4♂♂2♀♀ 4 August 1986, CM/OSF (SINMNH); **Gap of Dunloe** (V8787), lakes, ♂ 10 July 1986, JPOC; **Kenmare** (V9471), ♀ 18 August 1902, JJFXK, conf. JPOC (NMI); **Killarney**, ♂ 28 June & ♂ 16 July 1887, JJFXK, conf. JPOC (NMI), adult 1940, BPB, det. JRH; **Killarney Lakes**, trout stomachs, 37 larvae, UCD, det. JPOC; **L. Caragh** (V7292), ♂ pupa & 5♂♂ 27 August 1973, JPOC; **L. Cummernamuck** (V7489), 4♂♂ 5 July 1973, JPOC; **L. Currane** (V5065), 18 August 1965, JRH, (V5267), ♂ 6 July & 2♂♂ 25 August 1973, JPOC; **L. Derriana** (V6073), 2♂♂ 26 August 1973, JPOC; **L. Doon** [L. Slat] (Q6107), 17♂♂5♀♀ 7 July 1973, (Q6108), larva 7 July & 4♂♂ 28 August 1973, JPOC; **L. Garragarry** (V9983), larva June 1974, IDW; **L. Guitane** (W0285), 9♂♂3♀♀ 3 July 1973, JPOC; **L. Leane**, adult 19 May 1948, Fricker, det. JRH, (V9686), Castlelough Bay, IETS, ♂ 17 August & ♂♀ 1 September 1972, UCD, det. JPOC, 2 larvae reed bed, 13 April 1973, (V9686), boat house, 6♂♂4♀♀ 5 September 1972, 4♂♂3♀♀ 23 August 1973, (V9389), Inishfallen Island, ♀ 21 May 1973, (V9488), Ross Castle, 5♂♂ 29 May 1974, (V9291), Golf Course, 2♂♂3♀♀ 24 August 1973, JPOC, (V9686), Bog Bay, 2 larvae August 1972, EJW (NMI); **L. Looscaunagh** (V8879), ♀ 4 August 1986, CM/OSF (SINMNH),

5♂♂14♀♀ 11 October 1972, JPOC; **L. Nakirka** (V7389), 14♂♂3♀♀ 27 August 1973, JPOC; **Muckross** (V9786), adult 18 August 1877, AEE (BMNH); **Muckross Lake** (V9685), 2 larvae reed bed, 10 April 1973, boat house, ♀ 17 June & ♂ 24 August 1973, 6♂♂3♀♀ 28 May 1974, JPOC, Dundag Bay, IETS, 4♂♂ 10 July, ♂ 4 August, ♂ 1 September & ♂2♀♀ October 1972, UCD, det. JPOC, Goleen, 9♂♂ 28 May 1974, JPOC, larvae, June 1974, IDW, (V9485), Colleen Baun, 3♂♂ 23 August 1973, (V9585), next to Kilbeg Bay, ♂ 3 July 1973, (V9684), Torc Shore, 2♂♂ 24 August 1973, ♂ 20 June 1973, JPOC, (V9385), Brickeen Bridge, larva July 1972, EJW, det. JPOC (NMI); **R. Caragh** (V7186), 3♂♂2♀♀ 27 August 1973, (V7184), ♂ 3 July 1973, JPOC; **R. Flesk** (V9689), 2♂♂6♀♀ 25 June 1973, JPOC; **R. Galey** (R0438), ♀ 5 July 1973, JPOC; **R. Maine** (Q8905), 8♂♂ 27 August 1973, JPOC; **Roughty R.** (V9873), 2♂♂ 26 August 1973, (V9371), ♂ 4 July 1973, JPOC; **stream** (V9673), into Roughty R., ♂ 4 July 1973, JPOC; **Upper Lake, Killarney** (V9181), 10♂♂ 6 September 1972 (NMI), reed bed, 2♂♂♀ 29 May 1974, (V9282), 4♂♂ 29 May 1974, (V9383), Long Range, ♂ 29 May 1974, 8 larvae exposed rocky shore & 5 larvae sheltered rocky shore, 13 April 1973, (V9182), Tunnel, 3♂♂♀ 3 July 1973, JPOC. **KILDARE: Athy** (S6794) [R. Barrow/Grand Canal], MVLT 2♀♀ 8 July 1977, MDCW, det. JPOC; **Louisa Bridge** (N9936), ♂ 6 June 1991, JPOC; **Milltown** (N7617), canal at, 9♂♂8♀♀ 3 August 1986, CM/OSF (SINMNH), JPOC; **Pollardstown (Newbridge) Fen** (N7715), ♂♂♀♀ 11 September 1985, JPOC; **R. Greese** (S7488), Kilkea, adult 21 June 1947, JRH; **R. Liffey** (N8827), Clane, 10♂♂3♀♀ 11 July & ♂ 22 July 1972, JPOC. **KILKENNY: R. Nore** (S6337), Inistioge, ♂ 4 July 1995, JPOC. **LIMERICK: R. Shannon** (R6663), Castleconnell, ♂♂♀♀ 3 August 1988, JPOC (NMI). **LONGFORD: L. Ree** (N0069), Lanesborough, ♂ 14 August 2001, JPOC. **MAYO: Achill** [Island], Sraheens L. (F7100), ♂, det. JPOC (NMI); **L. Carra** (M1673), adults May-October 1964, MK; **L. Conn** (G1516), adults May-October 1964, MK, (G2306), Foxford, adult 20 August 1948, RS, det. JRH; **L. Feeagh** (F9700), larvae 1996/1997, JW; **L. Feenagh** (L9699), ♂♀ 27 August 1987, JMCH, det. JPOC; **L. Mask** (M1259), (M1465), adults May-October 1964, MK; **L. Moher** (L9777), larvae 1996/1997, JW. **MEATH: L. Sheelin** (N4582), Gortport, 2♀♀ 22 September 1973, JPOC; **R. Blackwater** (N7377), ♂2♀♀ 13 June 1976, JPOC; **R. Boyne** (N9271), Stackallen, adult 3 August 1945, JRH, (N8768), larva 16 December 1971, AFF, det. JPOC. **MONAGHAN: L. Muckno** (H8319), larva 1996/1997, JW. **OFFALY: Pallas Lake** (N2719), adult 23 August 1958, JRH. **SLIGO: L. Arrow** (G7711), adults May-October 1964, MK. **TIPPERARY: Kilmastulla R.** (R6867), (R9173), larvae/adults 1976-1977, MAOC; **Marl Lake** (R9644), ♂ 23 August 2000, MAOC, det. JPOC; **R. Suir** (S3921), Carrick-on-Suir, ♂♀ 20 May 1997, JPOC. **WESTMEATH: L. Derravaragh,** IETS 1973/1974: (N4169), Coolure Bay, adult, (N4067), near R. Inny, adult, (N3967), Nally's Shore, adult, PG; **L. Ennell** (N3847), 2 larvae sheltered rocky shore, 15 May 1973, (N3947), 3 larvae reed bed, 15 May 1973, JPOC, IETS 1973/1974: (N4048), Shaunoge

Shallows, adult, (N4149), Rushy Island Island, 2 adults, (N4045), Carrick Bay, adult, (N3944), Robin's own Shore, adult, (N3845), Croincha, adult, (N3946), mid lake off Dysart Island, adult, (N3947), Keoltown Reeds, adult, PG; **L. Owel**, IETS 1973/1974: (N3657), near Carrickphilbin Island, adult, (N3859), near Wattstown, 2 adults, (N3959), off Woodlands Shore, adult, PG. **WEXFORD: Corock R.** (S8921), 3♂♂♀ 20 July 2015, JPOC/MAOC, det. JPOC; **Fethard** (S7806), river near, ♂♀ 17 June 1990, JPOC; **Glenbough** (T0729), kettlehole near, ♂♂ 28 May 1987, JPOC; **J. F. Kennedy Park** (S7218), ♂ 20 August 1996, JPOC; **near Whitestown** (T0517), ponds, ♂ 9 June 1978, JPOC/MAOC, det. JPOC; **Oaklands Wood** (S7125), artificial lake, ♂♀ 9 July 2014, JPOC; **R. Slaney** (S9739), Enniscorthy, ♀ 27 July 2015, JPOC/MAOC, det. JPOC; **Wexford**, ♀ 11 July 1902, JJFXK, conf. JPOC (NMI). **WICKLOW: Avonmore R.** (T1593), 3♂♂♀ 21 July 1973, JPOC; **Glendalough** (T1196), 4♂♂6♀♀ 31 July 1986, CM/OSF (SINMNH); **L. Dan**, 31 larvae exposed rocky shore & 97 larvae sheltered rocky shore, 24 April 1973, JPOC, (O1502), 44♂♂50♀♀ 1 August & 6♂♂10♀♀ 4 August 1972, ♀ 12 August 1973, JPOC, larvae 1996/1997, JW, (O1504), 34♂♂11♀♀ 16 August 1972, JPOC, (O1503), 2♂♂ 21 July & 5♂♂15♀♀ 24 August 1972, ♂ 19 August 1973, JPOC; **Lower Lake, Glendalough** (T1196), 9♂♂7♀♀ 21 July 1973, JPOC; **Lower L. Bray** (O1416), 4♂♂♀ 18 August 1973, JPOC, (O1316), larvae 1996/1997, JW; **Potters R.** (T2985), ♀ pupa & 7♂♂♀ 21 July 1973, JPOC; **Poulaphuca (Blessington) Reservoir** (N9914), ♂ 18 August 1973, JPOC (NMI); **R. Slaney** (S8892), LT ♂ 24-25 July 1973, JPOC; **R. Vartry** (T2796), ♂ 20 July 1973, JPOC (NMI); **stream** (T1196), Glendalough, 2♂♂♀ 30 July 1986, JPOC; **Upper Lake, Glendalough** (T1096), 16♂♂6♀♀ 21 July & ♂ 19 August 1973, JPOC; **Upper L. Bray** (O1315), 48♂♂42♀♀ 18 August 1973, JPOC; **Vartry R.** (T2797), 2♂♂ 20 July 1973, JPOC; **Vartry Reservoir** (O1903), 2♂♂♀ 19 August 1973, (O2004), ♂ 24 August 1972, JPOC.

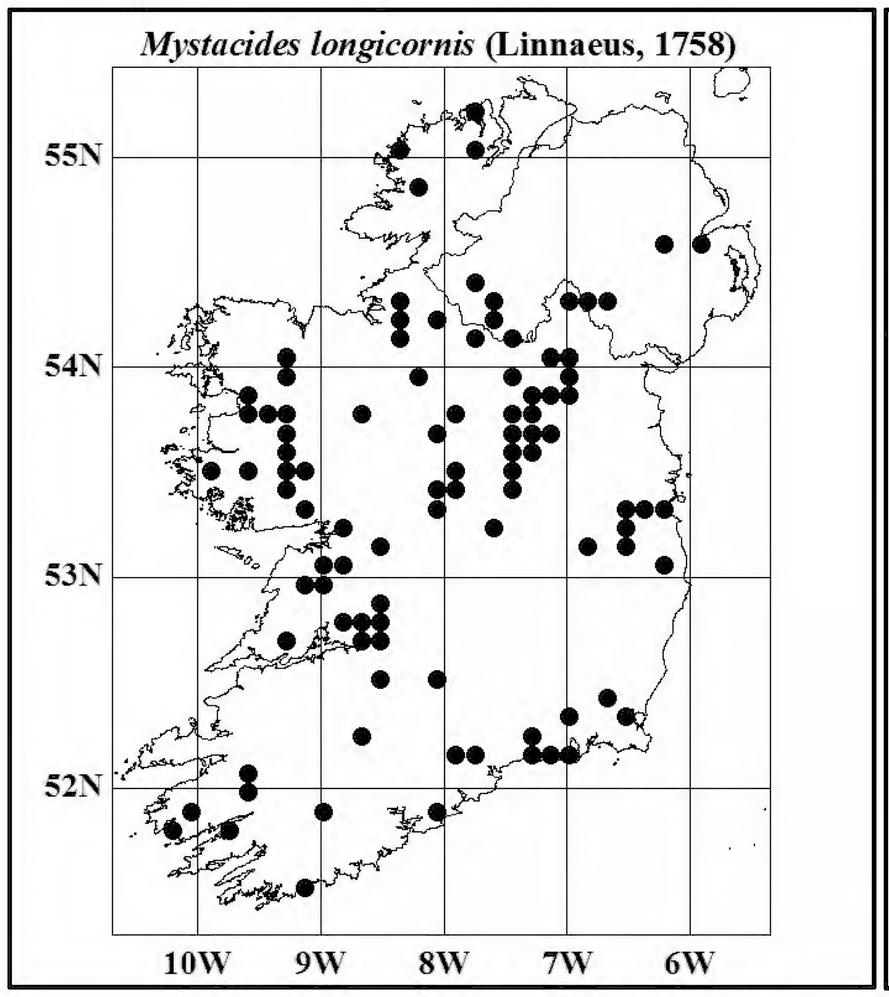
141. *Mystacides longicornis* (Linnaeus, 1758)

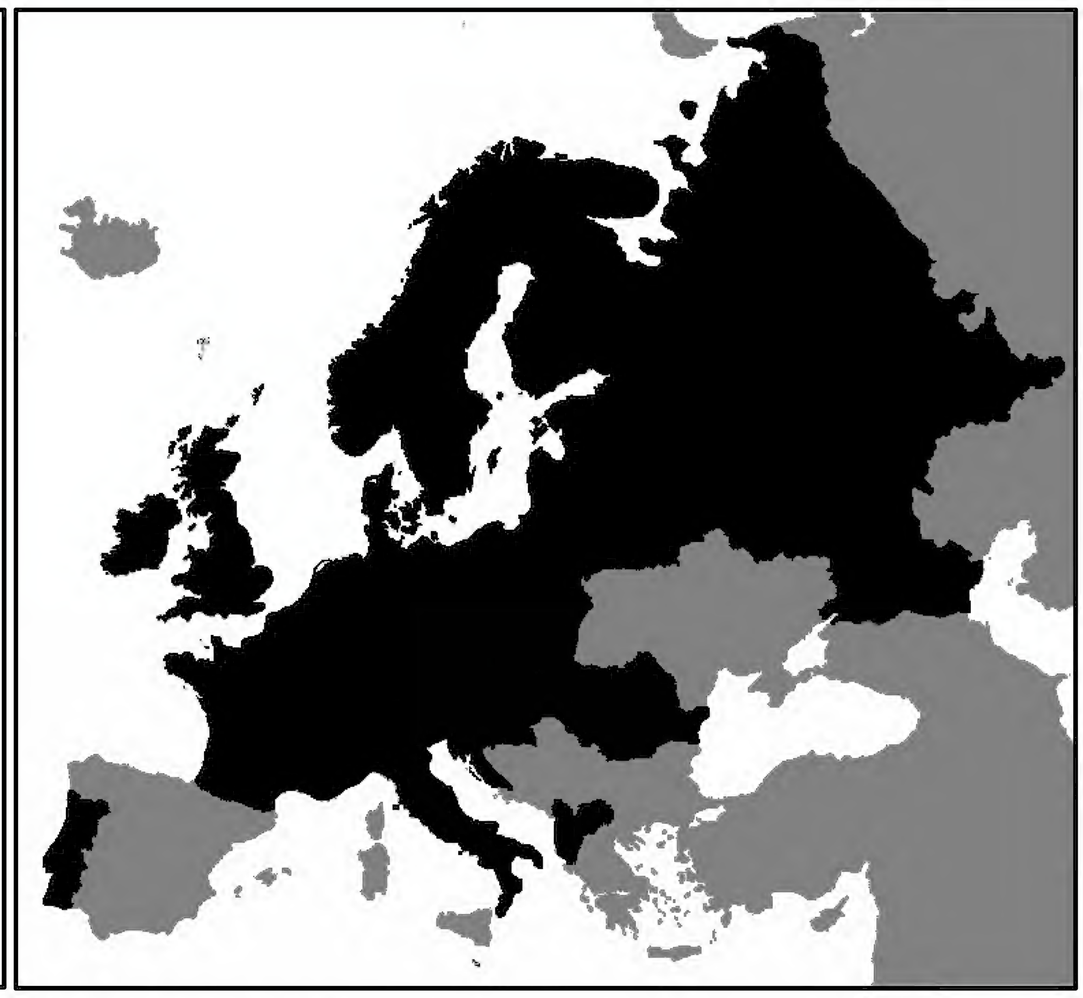
Mystacides longicornis is a widely distributed and very common species in Ireland. The adults often appear in huge swarms in the evening. The cased larvae occur in canals, lakes, ponds, reservoirs, rivers and turloughs. The Irish habitats include an artificial concrete boating lake in County Waterford and the artificial concrete ornamental lake in the grounds of University College Dublin. The case is straight or slightly curved and composed of sand grains often with added plant fragments. The larvae are omnivorous. The species is widespread in Europe.

Flight period: June–October (5 June–2 October).

Counties and 10km squares: Antrim, Armagh, Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Kildare, Leitrim, Limerick, Longford, Mayo, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Waterford, Westmeath, Wexford, Wicklow (25/32). The species is known from ninety-seven 10km squares (97/1019).

FIGURES 336-337. Known Irish and European distributions of *Mystacides longicornis*.





Published records

Morton, 1883 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* (**ARMAGH:** Armagh (H8745). **KERRY:** Ross Castle (V9488). **MAYO:** Ballin (L9987), Carrowbeg (L9295), Cogaula (M0486), Cushinsheen (M0482), Doogan (M0094), Knappagh [Knappaghbeg] (M0080), Mount Brown [Kinlooey] (M0381) and Prospect (L9581) Laoghs. **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WESTMEATH:** Bog of Allan [Allen] (N0639); Coosan Point (N0446) [L. Ree]; Shannon (N0243); Twy Laogh (N1043)). *Anon., 1892* (**WESTMEATH:** L. Derevaragh [L. Derravaragh]). *King and Halbert, 1910* (**ANTRIM:** Portmore L. (J1169). **ARMAGH**. **CORK:** Glandore (W2235). **DONEGAL:** Loughs Fern (C1824) and Keel (C1524). **KERRY:** Ross Castle (V9488). **MAYO:** Newport (L9893) and Westport (L9984) districts. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Summerhill (N0040) [Cross R. at Crannagh]. **WATERFORD:** Cappagh L. (X1996). **WESTMEATH:** Bog of Allen (N0639); Coosan Point (N0446) [L. Ree]; Deravaragh [L. Derravaragh] (N4663); Shannon (N0243); Twy L. (N1043)). *Halbert, 1912* (**MAYO:** Newport (L9893); Westport (L9984)). *Moriarty, 1972a* (**GALWAY:** L. Corrib (M1244), (M1245), (M1445); **MAYO:** L. Mask (M1364)). *Moriarty, 1973a* (**CAVAN:** Belturbet Lakes (H3020) = [H3722]. **CLARE:** L. Derg (R6070) = [R6978]; L. Inchiquin (R2080) = [R2789]. **GALWAY:** L. Corrib (M0050), (M1040) = [M1249]. **MAYO:** L. Carra (M1070) = [M1770]; L. Conn (G1010) = [G1511]. **ROSCOMMON:** L. Key (G8000) = [G8304]. **SLIGO:** L. Gill (G7030) = [G7232]). *Moriarty, 1973b* (**CAVAN:** Erne lakes (H3722). **MAYO:** L. Conn (G1511). **SLIGO:** L. Gill (G7232)). *Moriarty, 1974* (**CLARE:** L. Derg (R6978); L. Fin (R4369); L. Inchiquin (R2789)). **ROSCOMMON:** L. Key (G8304). **UNKNOWN COUNTIES:**

waters upstream of L. Derg). *O'Connor and Norton, 1977* (**WESTMEATH:** Hare Island, L. Ree (N0446); L. Coosan (N0544)). *Speight, 1977* (**WESTMEATH:** Coosan Lake [Coosan Point (N0446)]). *Moriarty, 1978* (**IRELAND:** lakes on R. Shannon). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H6906). **WICKLOW:** L. Dan (O1504), adults). *Wallace, 1981* (**CLARE**. **KERRY**). *Byrne and Reynolds, 1982* (**CLARE:** L. Gealain (R3195)). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V8990), (V9490); Muckross Lake; Upper Lake [Killarney] (V8981), (V9181)). *Dauod, Bolger and Bracken, 1985a* (**WICKLOW:** Roundwood (Vartry) Reservoir (O2004)). *Dauod, Bolger and Bracken, 1986* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *O'Connor, 1987* (**IRELAND:** widespread). *Bracken and Dauod, 1990* (**WICKLOW:** Roundwood Reservoir (O2002), (O2004)). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 5 out of 207 river sites). *Millane, 2006* (**MAYO:** L. Carra (M1673), (M1871), (M1770), (M1777)). *Porst and Irvine, 2009b* (**GALWAY:** Termon turlough (R4097)). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *Atalah et al., 2010* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**CLARE:** L. Bunny (R3796); Muckanagh L. (R3792). **DONEGAL:** Kindrum L. (C1843); L. Finn (B9101); L. Waskel (B7316). **GALWAY:** Ballinahinch [Ballynahinch] Lake (L7648); L. Rea (M6215). **KERRY:** L. Inchiquin (V8363). **LEITRIM:** Glencar L. (G7543). **MAYO:** Derryhick L. (M2099). **MEATH:** L. Bane (N5571). **WESTMEATH:** L. Derravaragh (N4066)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Leane (V9686); R. Inny (V5572)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Lower L. Erne (H2053); Mill L. (H2438); Upper L. Erne (H2339), (H2244), (H2731)).

Unpublished records and voucher specimens

WEST IRELAND: adult 1886, JJFXK (BMNH).

ANTRIM: Belfast (J3473), ♂♂ 1885, CGB, det. RMCL (misidentified as *Mystacides nigra*). **ARMAGH: Armagh** (H8745), ♂ 10 June 1890, [WFJ], conf. JPOC (NMI). **CAVAN: Corrakane L.** (H4000), small lake, LT 7♂♂2♀♀ 4-5 August 1973, JPOC; **L. Brackley** (H1921), ♂3♀♀ 4 August 1973, JPOC; **L. Cuilcagh** (N6389), 2♀♀ 2 October 1972, ♂ 31 August 1986, 2 larvae exposed rocky shore, 29 March 1973, JPOC; **L. Moneen** (G9828), 3♂♂♀ 3 August 1973, JPOC; **L. Ramor** (N6087), 2♂♂ 2 August 1973, (N5987), Virginia, 12♂♂ 10 August 1972, JPOC; **L. Sheelin** (N4686), 26 August 1946, JRH, IETS, 3♂♂♀ 5 August 1971, 3♂♂♀ 29 June 1971, IFT, det. JPOC, (N4785), Mount Nugent, ♂ 1 August 1986, CM/OSF (SINMNH), (N4182), Finnea, 2♂♂ 17 June 1973, JPOC, 18♂♂3♀♀ 8 July 1975, MFOG, 36 larvae 12 June, 34 larvae 14 October & 24 larvae 10 December 1975, KFW, det. JPOC, (N4285), Kilnahard, ♂ 1 August 1986, LT ♂ 22-23 September 1973, (N4786),

3♂♂♀ 5 August 1973, JPOC; **L. Sillan** (H7106), Shercock, 11 July 1965, JRH, 2♂♂♀ 11 August & 2♂♂ 1 September 1972, JPOC, (H7007), 7♂♂4♀♀ June, ♂ 27 July & ♂♀ August 1971, 6♂♂♀ 9 August 1972, (H6906), 2♂♂ 30 August 1972, LT 3♂♂ 31 July-1 August 1973, all JPOC, Kilnahard Bay, 8 larvae 8 May 1975, KFW, det. JPOC; **Moyduff Lake** (H6909), 7♂♂♀ 10 August & ♂♂ 29 September 1973, JPOC; **R. Annalee** (H6806), above L. Sillan, 2♂♂2♀♀ 27 July 1972, JPOC; **Town Lake** (H6014), Cootehill, adult 1960, JRH. **CLARE: Cratloe Woods** (R5060), ♂ 5 June 1992, JPOC; **Knockalough** (R1463), LT 28♂♂ 8-9 July 1973, JPOC; **L. Atedaun** (R2989), ♂♂♀♀ 1 September 1973, JPOC; **L. Bunny** (R3796), MVLT adult 23 August 2003, GAC (per IDW); **L. Derg** (R6876), north of Killaloe, ♂♀ 6 August 1986, CM/OSF (SINMNH), (R6979), LT 29♂♂ 2-3 September 1973, JPOC; **L. Doon** (R5674), 6♂♂ 12 July 1973, JPOC; **L. Gealain** (R3294), larvae 26 April 1979, R. Byrne, det. JPOC (NMI); **L. Inchiquin** (R2789), larva & 8♂♂ 10 July & LT 6♂♂ 31 August-1 September 1973, JPOC, larva 1996/1997, JW; **pond** (R6566), ♂ 12 July 1973, JPOC; **R. Shannon** (R6767), O'Brien's Bridge, ♂ 3 September 1973, JPOC, (R7072), Killaloe, ♀ 6 August 1986, CM/OSF (SINMNH); **Teereen L.** (R4671), LT 11♂♂ 11-12 July 1973, JPOC. **CORK: Annahala Bridge** (W3371), ♂ 20 August 1983, KGMB; **Kilcoman** [Bog] (R5811), MVLT ♀ 20-21 June 1992, KGMB, det. JPOC; **L. Aderry** (W9373), adults June-September 1969, MK. **DUBLIN: Farmleigh Park** (O0936), ♀ 17 June 2015, JPOC; **pond** (O1830), UCD, Belfield, larvae & ♂ 22 June 1973, JPOC; **Royal Canal** (O0236), Lucan, adult, MK, (O1233), Suir Bridge, ♂ 14 June 1973, JPOC. **GALWAY: Coole L.** (M4204), larva 25 June 1977, KP, det. JPOC; **Doo L.** (M4203), Garryland Wood, 2 larvae 24 June 1977, KP, det. JPOC; **Dunkellin R./Rahasane Turlough** (M4719), larva 28 June 1984, PB, det. JPOC; **Garryland Wood** (M4103), 3 larvae & 3♂♂2♀♀ pupae 24 June 1977, KP, det. JPOC; **Hackett L.** (west side) (M3049), Lisdonagh, MT ♂ 12-26 June 2014, JC, det MG; **L. Corrib** (M1745), adults June-September 1964, MK, (M1146), Upper, ♂ 27 June 1980, BC, conf. JPOC (NMI), (M2531), Hurney's Point [near Moycullen], MVLT ♂ 28 August 2003, KGMB, det. JPOC; **L. Rea** (M6215), larvae 1996/1997, JW; **Oughterard** (M1343), adults 3-9 August 1926, MEM (BMNH). **KERRY: Killarney**, ♂ 24 June 1887, JJFXK, conf. JPOC (NMI); **Killarney Lakes**, trout stomachs, larva, UCD, det. JPOC; **L. Leane** (V9687), 2 larvae reed bed, 10 April 1973, JPOC; **Muckross Lake** (V9684), ♂ 20 June 1973, JPOC, (V9685), Dundag Bay, IET ♂, UCD, det. JPOC; **Upper Lake, Killarney** (V8981), ♂ 3 July 1973, JPOC. **KILDARE: Lyon's Lake** (N9728), Newcastle Demesne [Lyon's Estate], near Celbridge, adult 9 June 1947, JRH; **Newbridge (Pollardstown) Fen** (N7715), MVLT near springs, canal drains and *Schoenus* fen, ♂♀ 22 July 1989, KGMB/JAG, det. JPOC. **LIMERICK: Limerick** (R5757) [R. Shannon], adult 16 July 1877, AEE (BMNH); **L. Gur** (R6441), 4♂♂ 7 July 1981, JPOC; **R. Shannon** (R6663), Castleconnell, LT 242♂♂6♀♀ 12-13 July 1973, JPOC. **LONGFORD: L. Ree** (N0069), Lanesborough, ♂ 14 August 2001, JPOC; **R. Shannon** (N0069),

Lanesborough, ♂♂ 15 June 1973, JPOC, (N0684), north of L. Forbes, 5♂♂♀ 16 July 1978, JPOC. **MAYO: L. Carra** (M1673), grabs 7 larvae, IFT, det. JPOC, (M1677), Castleburke, ♂ 28 June 2001, JPOC (NMI); **L. Conn** (G1516), adults June-September 1964, MK; **Westport** (L9984), 3♂♂, JJFXK, conf. JPOC (NMI). **MEATH: L. Sheelin** (N4582), Gortport, 14♂♂2♀♀ 22 September 1973, JPOC, (N4482), Goreport Bay, IETS 1973/1974 2 adults, PG. **MONAGHAN: Emyvale** (H6843), ♂♂ 20-30 July [1885-6], Morton Coll., conf. JPOC (NMS); **Glaslough** (H7241), ♂♂ August 1892, KJM, conf. JPOC (NMS), ♂♀ 12 August 1973, JPOC; **L. Moylemuck** (H6415), 4♂♂4♀♀ 27 July 1972, JPOC. **OFFALY: Pallas Lake** (N2719), MK, adult 21 August 1965, JRH. **ROSCOMMON: L. O'Flynn** (M5878), 2♂♂ 16 August 2001, JPOC; **R. Shannon** (M9830), 4 larvae 13 July 1972, AFF, det. JPOC, (N0339), down stream of Athlone, 25 larvae 13 July 1972, AFF, det. JPOC. **SLIGO: L. Bo** (G7918), adults June-September 1964, MK. **TIPPERARY: Kilmastulla R.** (R6867), larvae/adults 1976-1977, MAOC; **Marl Lake** (R9644), ♂ 23 August 2000, JPOC. **WATERFORD: Ballin L.** (S4503), near Kill, ♂♀ 19 July 1987, JPOC (NMI); **Ballymacaw Cove** (X6499), ♂ 6 July 1984, JPOC/MAOC, det. JPOC; **Ballyscanlan L.** (S5403), 2♂♂ 8 July 2014, JPOC/MAOC, det. JPOC; **Belle Lake** (S6605), ♂ 5 July 1990, JPOC; **Cappoquin** (X0999), ♂♀ 5 August 1902, JJFXK, conf. JPOC (NMI); **Knockaderry Reservoir** (S4906), 2♂♂3♀♀ 19 July 1987, JPOC; **Tramore** (S5801), boating pond, 3 larvae 4 July 1984, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 3 July & ♀ 13 August 1888, JJFXK, conf. JPOC (NMI), adult 1a August 1888, [JJFXK] (BMNH); **L. Derravaragh** (N4663), adults June-September 1964, MK; **L. Ennell**, adults June-September 1964, MK, (N4146), adult 28 September 1946, JRH, ♂ 31 August 1986, MFOG, det. JPOC, (N3847), 6 larvae sheltered rocky shore & 34 larvae reed bed, (N3947), ♂ 15 May 1973, JPOC, IETS 1973/1974: (N4149), Rushy Island, adult, (N4147), near Goose Island, adult, (N3944), Robin's own shore, adult, PG; **L. Owel** (N4156), adults June-September 1971, MK, IETS, ♂ 17 September, ♂ 14 July, 2♀♀ 25 August, ♂♀ 30 August & ♂ 1 October 1971, IFT, det. JPOC, IETS 1973/1974: (N4156), near Beach Hill, 2 adults, (N4056), Srudoora Island, adult, (N3859), near Wattstown, adult, (N3960), Clonhugh shore, 3 adults, PG; **R. Shannon** (N0440), dredge 5 larvae 13 July 1972, AFF, det. JPOC; **White Lake** (N5172), near Castlepollard, ♂♀ 17 September 1972, JPOC. **WEXFORD: angling ponds near Kellystown** (S8930), 4♂♂ 6 July 2014, JPOC/MAOC, det. JPOC; **near Whitestown** (T0517), ponds, larva & ♂ 9 June 1978, JPOC/MAOC, det. JPOC; **Oaklands Wood** (S7125), artificial lake, ♂♂ 8 July 2014, JPOC. **WICKLOW: Brittas Ponds** (O0322), adult 15 August 1947, JRH; **L. Dan** (O1504), ♂ 24 August 1972, JPOC, (O1502), larvae 1996/1997, JW; **Poulaphuca (Blessington) Reservoir** (N9914), 15♂♂2♀♀ 18 August 1973 (NMI), (O0108), 2♂♂ 22 July 1973, JPOC, larva 1996/1997, JW; (O0010), Lackan, adult 22 June 1945, JRH; **Vartry Reservoir** (O1903), 9♂♂5♀♀ 31 July 1986, CM/OSF (SINMNH), (O2004), ♂ 24 August 1972, (O1903), 10♂♂♀ 21 July & LT 33♂♂3♀♀ 19-20

August 1973, JPOC.

[*Mystacides nigra* (Linnaeus, 1758)

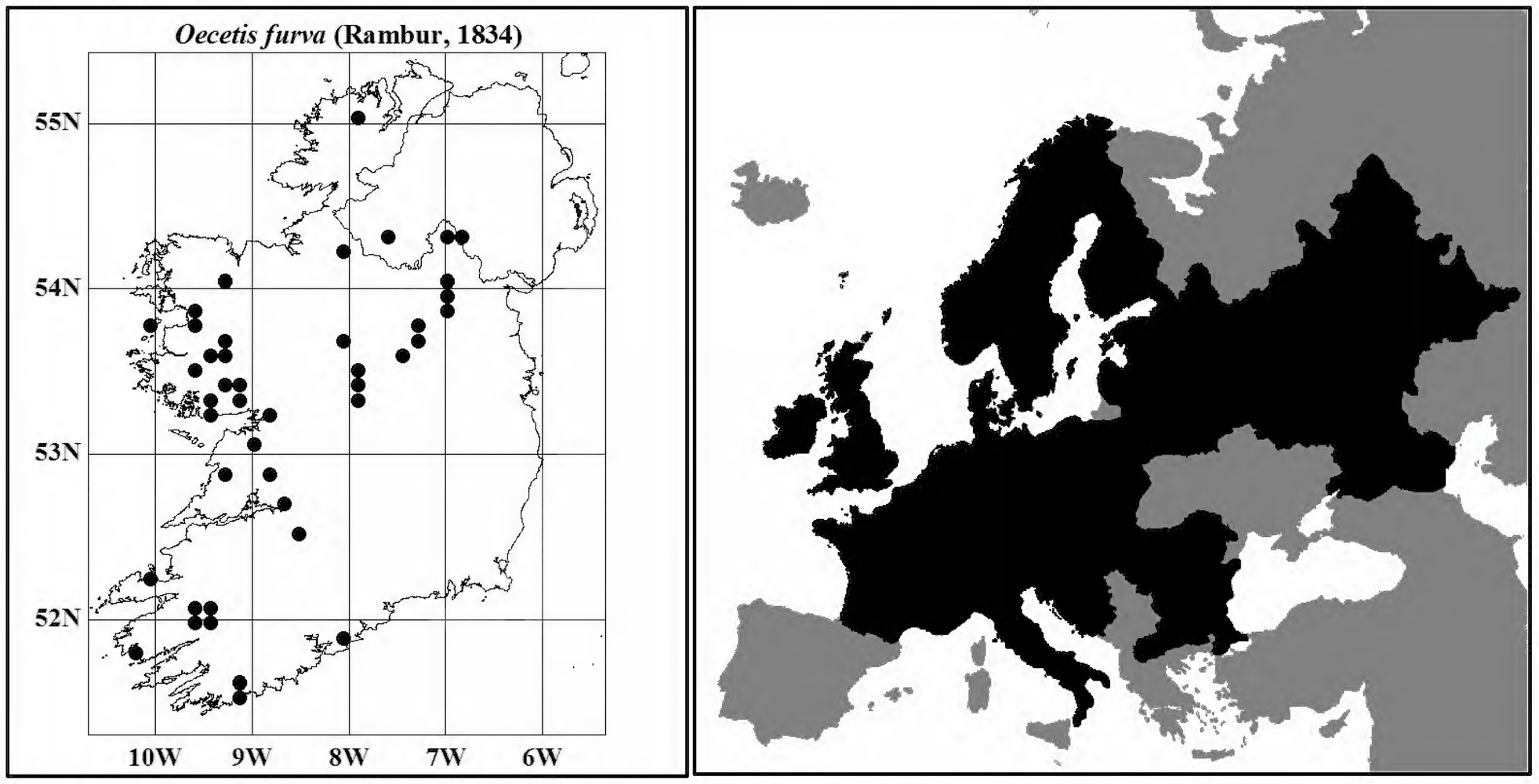
There were two specimens in drawer 39 of the main pinned collection (BMNH) under *Mystacides nigra* and labelled "Belfast Antrim 1885 C. G. Barrett McLach[an] Coll[ection] BM1938-674 McL[achlan] det.". Both were misidentified and were redetermined by JPOC as 2♂♂ of *Mystacides longicornis*. Although the specimens are labelled Antrim, the records were published as from Down. In the Morton Collection (NMS), there is a ♀ named as *Mystacides nigra* and labelled "Glaslough Aug[ust] [18]92 Morton Coll[ection]. However, it is a ♀ *Mystacides longicornis*, det. JPOC.

Published records

McLachlan, 1885 (DOWN: R. Lagan). *King, 1888a* (DOWN: R. Lagan). *Morton, 1892b* (MONAGHAN: Glasslough neighbourhood). *King and Halbert, 1910* (DOWN: R. Lagan. MONAGHAN: Glaslough). *Botosaneanu and Malicky, 1978* (IRELAND). *O'Connor and Nelson, 2012* (listed as a misidentification).]

142. *Oecetis furva* (Rambur, 1834)

FIGURES 338-339. Known Irish and European distributions of *Oecetis furva*.



Oecetis furva is widely distributed in central and western Ireland. The cased larvae normally occur in lakes and ponds. A larva has also been found in a turlough. The case is fragile and composed of plant fragments. The larvae are shredders and predators. The species is widespread in Europe but has not been recorded from the Iberian Peninsula.

Flight period: June–August (25 June–1 October).

Counties and 10km squares: Cavan, Clare, Cork, Donegal, Fermanagh, Galway, Kerry, Limerick, Longford, Mayo, Monaghan, Offaly, Westmeath (13/32). The species is known from forty-three 10km squares (43/1019).

Published records

Morton, 1883 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *McLachlan, 1874-1884* (**MONAGHAN** (included in the First Additional Supplement, 1884)). *Morton, 1886* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* (**GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Ardagh Laogh (V9888); Denough [Deenagh] R. (V9792); Dinish (V9385); Gap of Dunloe (V8787); Ross Castle (V9488). **MAYO:** Bleachyard (L9994), Broad (L9992), Doogan (M0094), Knappagh [Knappaghbeg] (M0080) and Prospect (L9581) Laoghs. **MONAGHAN:** Glaslough (H7241). **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Killinure (N0745); Waterston Demesne [Waterstown] (N1045)). *Morton, 1892b* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* (**DONEGAL:** Sproule's L. (C1018). **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Maumwee [Manwee] L. (L9748). **KERRY:** Ardagh L. (V9888); Deenagh R. (V9792); Dinish (V9385); Gap of Dunloe (V8787); Ross Castle (V9488). **MAYO:** Bleachyard (L9994); Doogan (M0094), Broad (L9992), Knappagh [Knappaghbeg] (M0080) and Prospect (L9581) Loughs. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **WESTMEATH:** Coosan (N0446) [L. Ree]; Killinure (N0745); Waterstown demesne (N0946)). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822); Oughterard (M1343)). *Speight, 1977* as *Oecetus* (**WESTMEATH:** Coosan Lake [Coosan (N0446)]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Wallace, 1981* (**KERRY**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**GALWAY:** lowland lakes (M0329), (M0229), (M0929), (M0927), (M0927)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); Muckross Lake (V9685)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Mill L. (H2438); Upper L. Erne (H2339)).

Unpublished records and voucher specimens

WEST IRELAND: adult 1886, JJFXK, det. RMCL (BMNH).

CAVAN: L. Cuilcagh (N6389), ♂ 10 August 1972, JPOC; **L. Sheelin** (N4384), Kilnahard Bay, IETS 1973/1974 adult, PG; **Moneen L.** (G9828), 10♂♂♀ 3 August 1973, JPOC; **Moyduff Lake** (H6909), ♂ 10 August 1973, JPOC; **Muddy L.** (H7205), ♂2♀♀ 1 August 1973, JPOC (NMI). **CLARE: L. Bunny** (R3796), ♂ 31 August 1973, JPOC; **L. Moghna** (R1384), ♂♀ 9 July & ♂♀ 30 August 1973, JPOC; **O'Brien's Big Lake** (R4182), 2♂♂ 11 July 1973, JPOC. **CORK: Ballinlough** (W1938), near Leap, ♂♂ 12 August 1999, PA, det. JPOC; **Glandore** (W2235), ♂

(misidentified as *Adicella reducta*), det. JPOC (NMI); **L. Aderry** (W9373), adults June-August 1969, MK. **FERMANAGH: Mill L.** (H2438), near Bellanaleck, LT 26♂♂ 26 August 2014 (NMI), LT 10♂♂ 1 September 2015, JPOC/MAOC, det. JPOC. **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva 28 June 1984, PB, det. JPOC; **Inverin** (M0822), adults 17 July-2 August 1926, MEM (BMNH); **L. Corrib** (M2531), Hurney's Point [near Moycullen], MVLT ♂ 30 July 2003, KGMB, det. JPOC, (M2642), Keekill, LT ♂ 30 July 2003, KGMB, det. JPOC, (M2741), Cloonmore, LTS ♂ 22 July & 10♂♂ 6 August 2014, MG/CC, det MG; **L. Mask** (M0957), Kilbeg Lower, LT 2♂♂ 16 August 2014, MG, (M2341), Knockferry, LT ♂ 21 August 2014, MG/CC, det. MG; **L. Maumwee** [Manwee] (L9748), larvae 1996/1997, JW. **KERRY: Killarney**, ♂ 29a June & ♀ 28 June 1887, JJFXK (NMS), adult 12 July 1887, [JJFXK] (BMNH), ♂ 29a June (misidentified as *Oecetis lacustris*) and ♂ 22b July 1887, det./conf. JPOC (NMI); **L. Gill** (Q6114), ♂ 28 August 1973, JPOC; **Muckross** (V9786), Killarney, adult 18 August 1877, AEE (BMNH); **Muckross Lake** (V9685), Goleen, larva June 1974, IDW. **LIMERICK: Limerick** (R5757) [R. Shannon], adults 16 August 1877, AEE (BMNH); **L. Gur** (R6441), ♂ 7 July 1981, JPOC. **LONGFORD: L. Ree** (N0069), Lanesborough, ♀ 14 August 2001, JPOC. **MAYO: Clare Island** (L6985), larva, peaty lake, SF (det. IDW), MT ♂♀, SF, conf. JPOC (NMI); **Knappagh Loughs** [Knappaghbeg] (M0080), adult July 1886, JJFXK (BMNH); **L. Conn** (G1516), adults June-August 1964, MK; **L. Mask** (M1259), (M1465), adults June-August 1964, MK; **Prospect Loughs** (L9581), adults July & August 1886, JJFXK (BMNH); **Westport** (L9984), 7♂♂, JJFXK, conf. JPOC (NMI). **MONAGHAN: Emyvale** (H6843), ♂♂♀♀ 20-30 July [1885-6], Morton Coll., conf. JPOC, (NMS); **Glasslough** (H7241), ♂ July 1883, A. Freeland, Morton Coll., conf. JPOC (NMS), ♂♀ 10 August 1887, ♂ July, ♂♂♀♀ August 1892 (BMNH, NMS), ♂ 25 June 1885, A. Freeland, det. RMCL, conf. JPOC (BMNH); **Kelvey L.** (H7341), ♂ July 1883, A. Freeland, Morton Coll. (NMS). **OFFALY: Mongan Bog** (N0330), ♂ 24 August 1983, D. Higgins/KGMB, det. JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 5a August & ♀ 15 August 1888, JJFXK (NMS), ♀ 11 August 1888, JJFXK, conf. JPOC (NMI); **L. Lene** (N5067), larva 1996/1997, JW, ♂♀ 11 August 1998, JPOC (NMI); **L. Owel** (N4156), adults June-August 1971, MK, IETS 3♂♂ 18 August, 3♂♂ 25 August (NMI) & 2♂♂ 1 October 1971, IFT, det. JPOC.

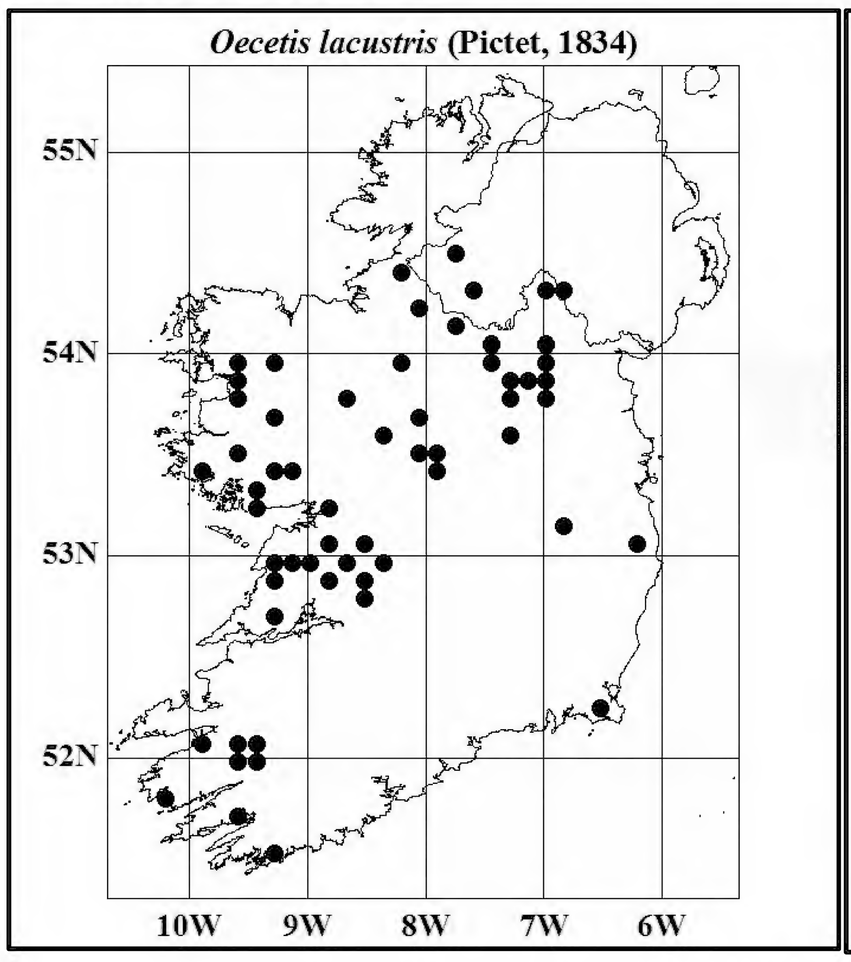
143. *Oecetis lacustris* (Pictet, 1834)

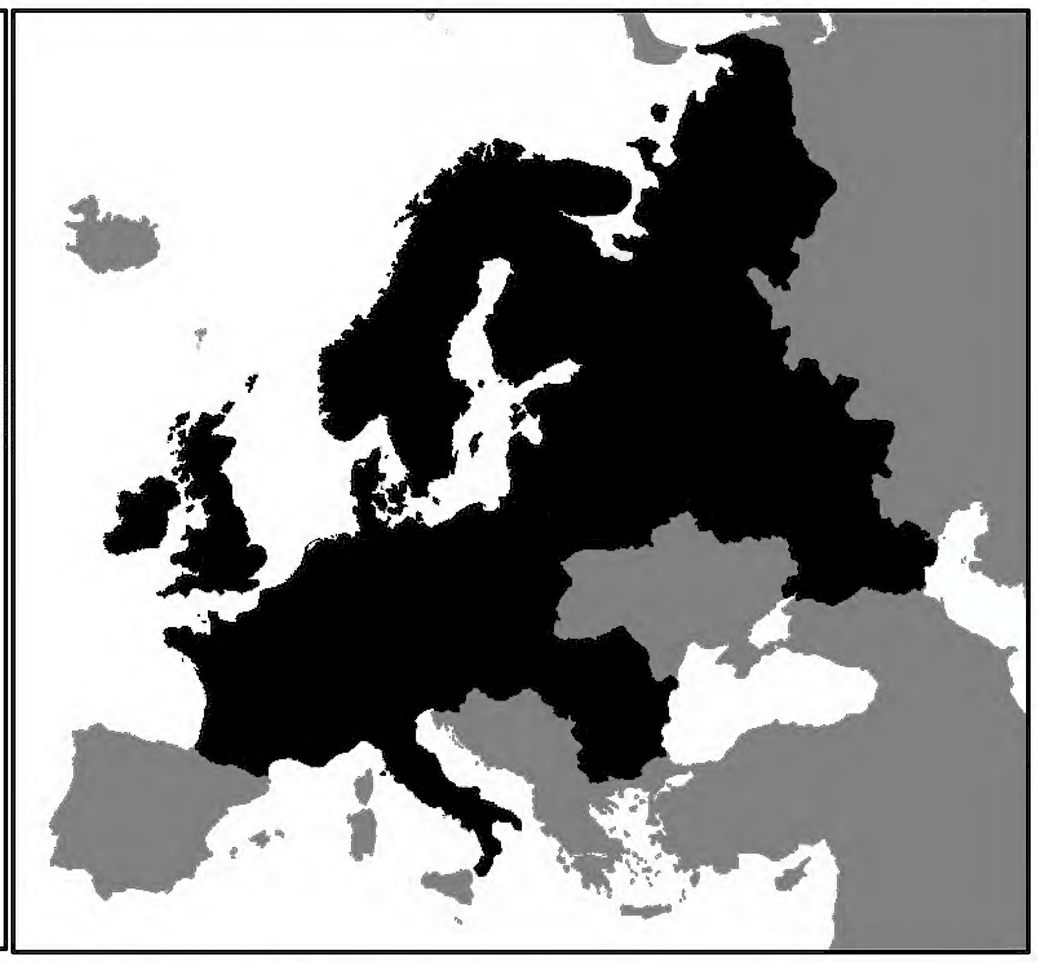
Oecetis lacustris is widely distributed in Ireland. The cased larvae normally occur in lakes, ponds and rivers. A larva has also been found in a turlough. The case is constructed from sand grains and is both curved and tapering. The larvae are predators. The species is widespread in Europe but has not been recorded from the Iberian Peninsula.

Flight period: June–October (21 June–11 October).

Counties and 10km squares: Cavan, Clare, Cork, Fermanagh, Galway, Kerry, Kildare, Leitrim, Longford, Mayo, Monaghan, Roscommon, Westmeath, Wexford, Wicklow (15/32). The species is known from fifty-nine 10km squares (59/1019).

FIGURES 340-341. Known Irish and European distributions of *Oecetis lacustris*.





Published records

Morton, 1886 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* (**GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **KERRY:** Ardagh Laogh (V9888); Denough [Deenagh] R. (V9792); Horses' Glen (V9981); Ross Castle (V9488); Torc Cascade (V9684). **MAYO:** Doogan (M0094), Knappagh [Knappaghbeg] (M0080) and Prospect (L9581) Laoghs. **MONAGHAN:** Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Coosan Point (N0446) [L. Ree]; Hare Island (N0446) [L. Ree]; Shannon (N0243); Wineport (N0746) [L. Ree]). *King and Halbert, 1910* (**GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244). **KERRY:** Ardagh L. (V9888); Deenagh R. (V9792); Horse's Glen (V9981); Ross Castle (V9488); Torc Cascade (V9684). **MAYO:** Doogan (M0094), Knappagh (M0080) and Prospect (L9581) Loughs. **ROSCOMMON:** Yew Point (N0146) [L. Ree]. [**WESTMEATH**]**:** Coosan Point (N0446) [L. Ree]; Hare Island (N0446) [L. Ree]; Shannon (N0243); Wineport (N0746) [L. Ree]. **WEXFORD:** Johnstown Castle (T0216) [small lakes]). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Cashel Bay (L7942); Inverin (M0822)). *Bracken and Murray, 1973* (**CORK:** L. Avaul (V9153). **KERRY:** L. Kilbrean (W0093)). *Speight, 1977* as *Oecetus* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan Point (N0446)]; Hare Island (N0446)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan (H6906), adults. **WICKLOW:** L. Dan (O1504), adults). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake; Upper Lake [Killarney]). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and*

Philipson, 1990 (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* (**GALWAY:** upland lake (M6701), 183m, lowland lakes (M0329), (M0229), (M0927)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Currane (V5065); L. Leane (V9686); Muckross Lake (V9685)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** R. Erne (H2637)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Lower L. Erne (H1758); Mill L. (H2438)).

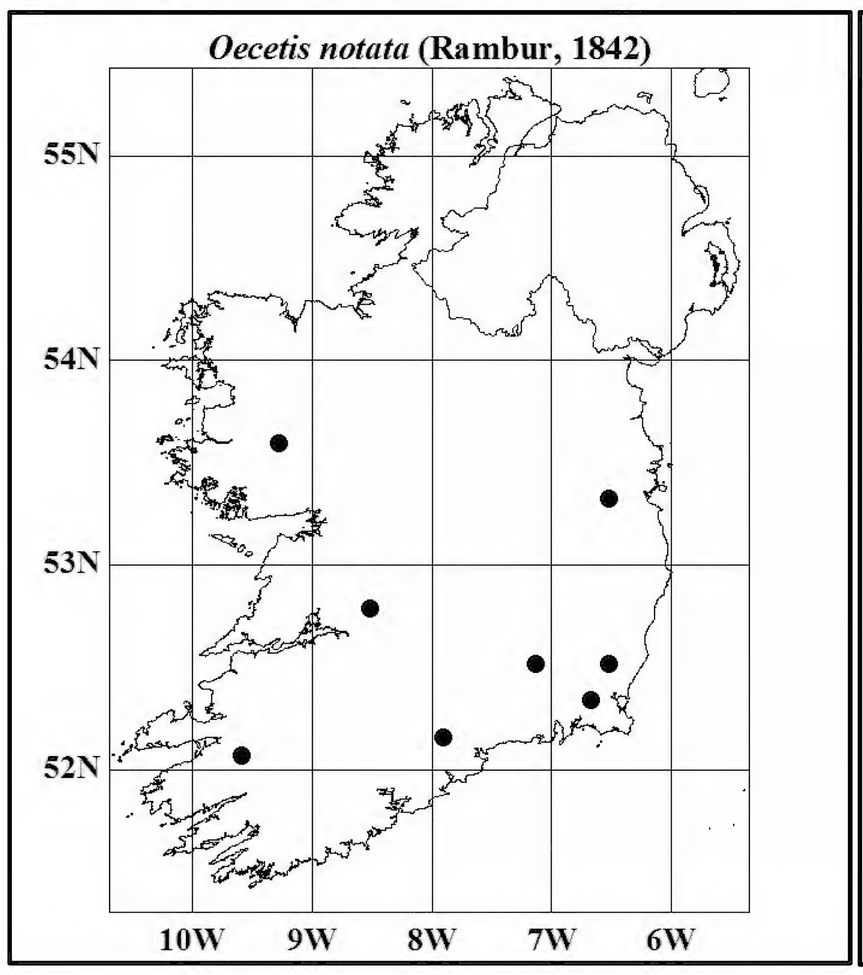
Unpublished records and voucher specimens

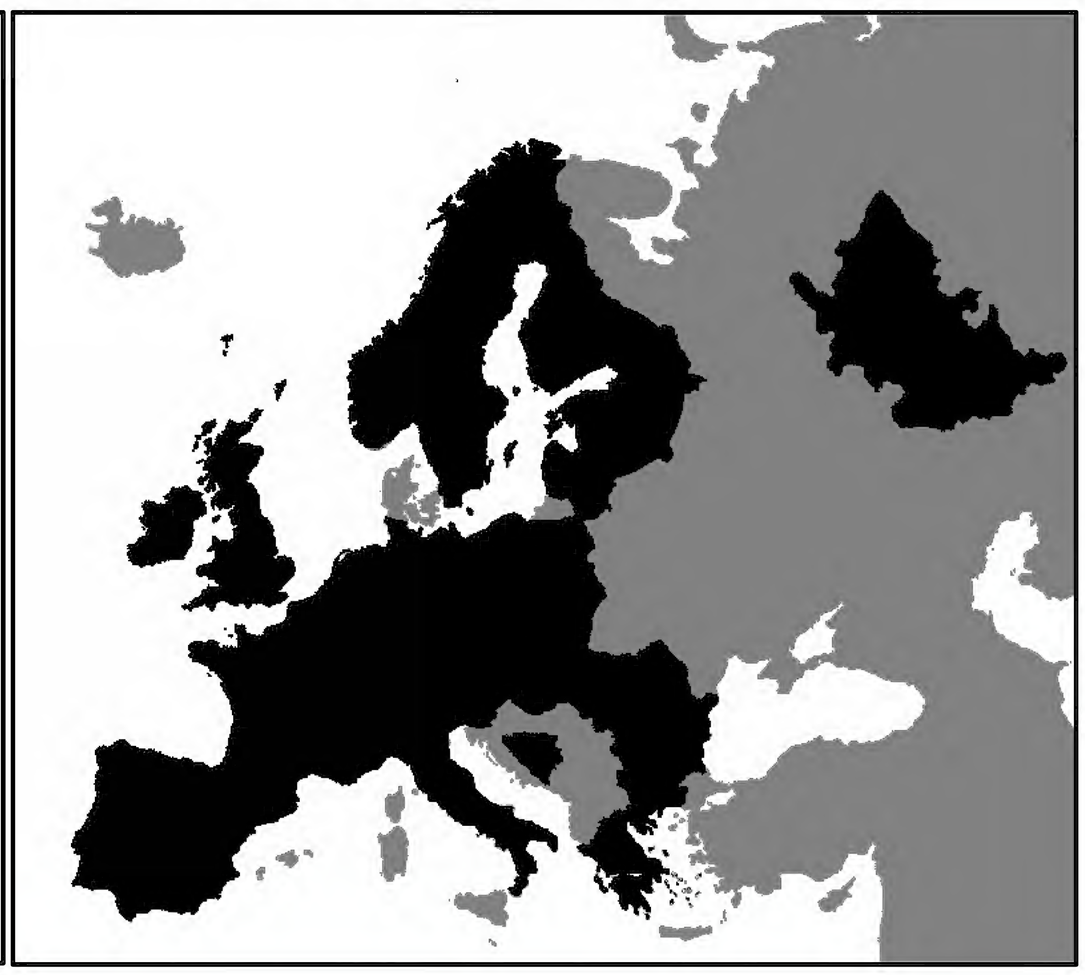
CAVAN: Corrakane L. (H4000), small lake, LT 9♂♂ 4-5 August 1973, JPOC (NMI); **L. Aush** (small pond) (H6301), ♀ 2 August 1973, JPOC; **L. Brackley** (H1921), ♀ 4 August 1973, JPOC; **L. Cuilcagh** (N6389), 4♂♂3♀♀ 10 August 1972, JPOC; **L. Drummany** (H3712), 4♂♂5♀♀ 4 August 1973, JPOC; **L. Moneen** (G9828), ♀ 3 August 1973, JPOC; **L. Mullagh** (N6785), 5♀♀ 10 August 1972, JPOC; **L. Oughter** (H3308), ♂ 4 August 1973, JPOC; **L. Ramor** (N5987), near river, 30♂♂♀ 10 August 1972, (N6087), 4♂♂7♀♀ 2 August 1973, JPOC; **L. Sheelin** (N4686), adult 26 August 1946, JRH, (N4786), ♀ 5 August 1973, JPOC, (N4783), east shore, Tonagh, ♂ 30 July 2012, MG; **L. Sillan** (H6906), 2♀♀ 30 August 1972, ♀ 31 July & LT 5♂♂ 31 July-1 August 1973, (H7106), ♀ 11 August 1972, JPOC; **Moyduff Lake** (H6909), 4♂♂9♀♀ 10 August 1973, JPOC; **Muddy L.** (H7205), 3♂♂♀ 1 August 1973, JPOC; **R. Barora** (N6893), LT ♀ 1-2 August 1973, JPOC; **R. Erne** (H3712), ♂♀ 4 August 1973, JPOC. **CLARE: Knockalough** (R1463), ♀ 29 August & LT ♂ 8-9 July 1973, JPOC; **Lickeen L.** (R1690), 2♂♂♀ 11 August 2003, JPOC; **L. Derg** (R7071), Killaloe, adult June 1948, Farran, det. JRH, (R7186), Mount Shannon, LT ♂ 26-27 August 2003, KGMB, det. JPOC, (R6979), LT 123♂♂17♀♀ 2-3 September 1973, JPOC; **L. Graney** (R5691), 6♂♂4♀♀ 3 September 1973, JPOC; **L. Inchiquin** (R2789), LT 4♂♂ 31 August-1 September 1973, JPOC; **L. Moghna** (R1384), 2♂♂ 9 July 1973, JPOC; **O'Brien's Big Lake** (R4182), ♂ 11 July & LT ♂ 1-2 September 1973, JPOC; **pond** (R6566), 2♂♂ 12 July & ♂ 2 September 1973, JPOC; **pond** (R3290), ♂♀ 30 August 1973, JPOC; **R. Shannon** (R6767), O'Brien's Bridge, ♀ 3 September 1973, JPOC. **CORK: Liss Ard House** (W1331), south of Skibbereen, MVLT ♂ 24 August 1991, KGMB, det. JPOC; **L. Avaul** (V9153), adults July-August 1969, MK. **FERMANAGH: R. Erne** (H2637), Cloonatrig, Bellanaleck, LT ♂ 26 August 2014, JPOC/MAOC, det. JPOC (NMI). **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva 28 June 1984, PB, det. JPOC; **Hollygrove Lake** [Ballaghdacker L.] (M7857), 2♂♂ 8 August 2001, JPOC; **Inverin** (M0822), adults 17 July-2 August 1926, MEM (BMNH); **L. Corrib** (M2341), Middle, ♂ 16 August 1980, BC, conf. JPOC (NMI), (M2741), Cloonmore, LT 6♂♂ 6 August 2014, MG/CC, det MG; **L. Cutra** (R4698), MVLT ♂ 23 June 1996, KGMB, det. JPOC; **Ma'am** [Maam] (L9653), 2♂♂, JJFXK, conf. JPOC (NMI). **KERRY: Kilbrean**

Lake (W0093), adults July-August 1969, MK; **Killarney**, adult August (NMS), ♂ 25a June, 2♀♀ 29a June & ♀ 30 June, ♀ 11 July & ♂♀ 21 July 1887, JJFXK, conf. JPOC (NMI); **L. Cummernamuck** (V7489), ♂ 5 July 1973, JPOC; **L. Currane** (V5267), 3♂♂ 25 August 1973, JPOC; **L. Leane** (V9686), boat house, 5♂♂11♀♀ 5 September 1972 (NMI), 24♂♂6♀♀ 23 August 1973, JPOC; **L. Looscaunagh** (V8879), ♂ 11 October 1972, JPOC; **Upper Lake, Killarney** (V9181), 10♂♂55♀♀ 6 September 1972, (V9383), 2♂♂ 3 July 1973, JPOC. **KILDARE: Newbridge (Pollardstown) Fen** (N7715), near springs, canal drains and *Schoenus* fen, MVLT ♀ 22 July 1989, KGMB/JAG, det. JPOC (NMI). **LEITRIM: Glenade L.** (G8246), 5♂♂ 6 August 1989, JPOC. **LONGFORD: L. Ree** (N0069), Lanesborough, 2♀♀ 14 August 2001, JPOC. **MAYO: L. Conn** (G1705), south-west shore, adult 10 September 1947, JRH; **L. Feenagh** (L9699), adults July-August 1964, MK; **Westport** (L9984), 9♂♂♀, JJFXK, conf. JPOC (NMI). **MONAGHAN: Emyvale** (H6843), ♂ 20-30 July [1885-6], Morton Coll. (NMS); **Glasslough** (H7241), ♀ August 1892, KJM (NMS). **ROSCOMMON: L. Key** (G8404), Rockingham Estate, ♂ 11 August 2001, JPOC, (G8205), near Boyle R. inlet, 3♂♂ 10 August 1996, PCB; **L. O'Flynn** (M5878), ♂ 10 August 2001, JPOC; **R. Shannon** (N0243), Athlone, adults 20 August 1958, PHW (one det. DEK) (BMNH)). **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 10a August & ♂ 15 August 1888, JJFXK (NMS), ♀ no date, ♂ 10a August, ♂ 13 August, ♂♀ 13a August, ♂ 14 August & ♂ 15 August 1888, JJFXK, conf. JPOC (NMI); **L. Derravaragh** (N4662), 2♂♂ 18 August 1978, JPOC; **L. Ree** (N0245), Carby [Carberry] Island, adult 18 August 1958, PHW (BMNH). **WICKLOW: L. Dan** (O1502), 2♂♂ 24 August 1972, JPOC; **Vartry Reservoir** (O1903), LT ♂ 19-20 August 1972, JPOC.

144. *Oecetis notata* (Rambur, 1842)

FIGURES 342-343. Known Irish and European distributions of *Oecetis notata*.





Oecetis notata is a local species in Ireland associated with moderately flowing large rivers. The cased larvae are predators. No Irish larvae have been found but in Britain, the case is dorso-ventrally flattened and composed of moss leaves (Wallace, Wallace and Philipson, 2003). The larva has a distinctive pale yellow head. The species is widespread in much of Europe.

Flight period: June–August (26 June–25 August). There are only a small number of Irish adult records.

Counties and 10km squares: Dublin, Kerry, Kilkenny, Mayo, Tipperary, Waterford, Wexford (7/32). The species is known from eight 10km squares (8/1019).

Published records

King, 1888a (**DUBLIN:** Lucan Demesne (O0235) [R. Liffey]). *Halbert, 1908* (**DUBLIN:** district). *King and Halbert, 1910* (**DUBLIN:** Lucan demesne (O0235) [R. Liffey]. **WATERFORD:** near Lismore (X0498) [R. Blackwater]). *Jenkins, 1977* ([**DUBLIN]:** Lucan Demense. **TIPPERARY**. **WATERFORD**). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor, 1978a* (**IRELAND:** rediscovered); *Wallace, 1981* (**IRELAND**). *O'Connor, 1987* (**DUBLIN**. **TIPPERARY**. **WATERFORD**). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor and O'Connor, 2014a* (**DUBLIN:** Lucan Demesne (O0235) [R. Liffey]. **KERRY:** Killarney (V9488) [? R. Flesk]. **KILKENNY:** Coum R. where it enters R. Nore, Inistioge (S6337). **MAYO:** L. Mask (M1259), (M1465) [several rivers including R. Robe]. **TIPPERARY:** Kilmastulla R. (R6867). **WATERFORD:** near Lismore (X0498) [River Blackwater]).

Unpublished records and voucher specimens

DUBLIN: Lucan (O0235) [R. Liffey], ♂♀ 25 August 1888, JJFXK, conf. JPOC (NMS), 3 adults 25 August 1888, JJFXK (BMNH), 2♂♂ 25 August 1888, JJFXK, conf. JPOC (NMI), adult August 1888, [JJFXK], per IDW (NMW). **KERRY: Killarney** [V9488], 3 adults 26 June, 28 June & 22b July 1887, [JJFXK], Harwood Coll. (BMNH). **KILKENNY: The Coum R.** (S6337) where it enters R. Nore, Inistioge, ♂♀ 10 July 2014, JPOC/MAOC, det. JPOC (NMI); **R. Nore** (S6337), Inistioge, 3♂♂♀ 21 July 2015, JPOC/MAOC, det. JPOC (NMI). **TIPPERARY: R. Kilmastulla** (R6867), near E.S.B. hatchery and R. Shannon, swarming at dusk, ♂♀ 3 August 1976, M. Norton (now MAOC), conf. JPOC (NMI). **WEXFORD: Corock R.** (S8921), ♀ 20 July 2015, JPOC/MAOC, det. JPOC; **R. Slaney** (S9739), Enniscorthy, ♂ 27 July 2015, JPOC/MAOC, det. JPOC (NMI).

145. *Oecetis ochracea* (Curtis, 1825)

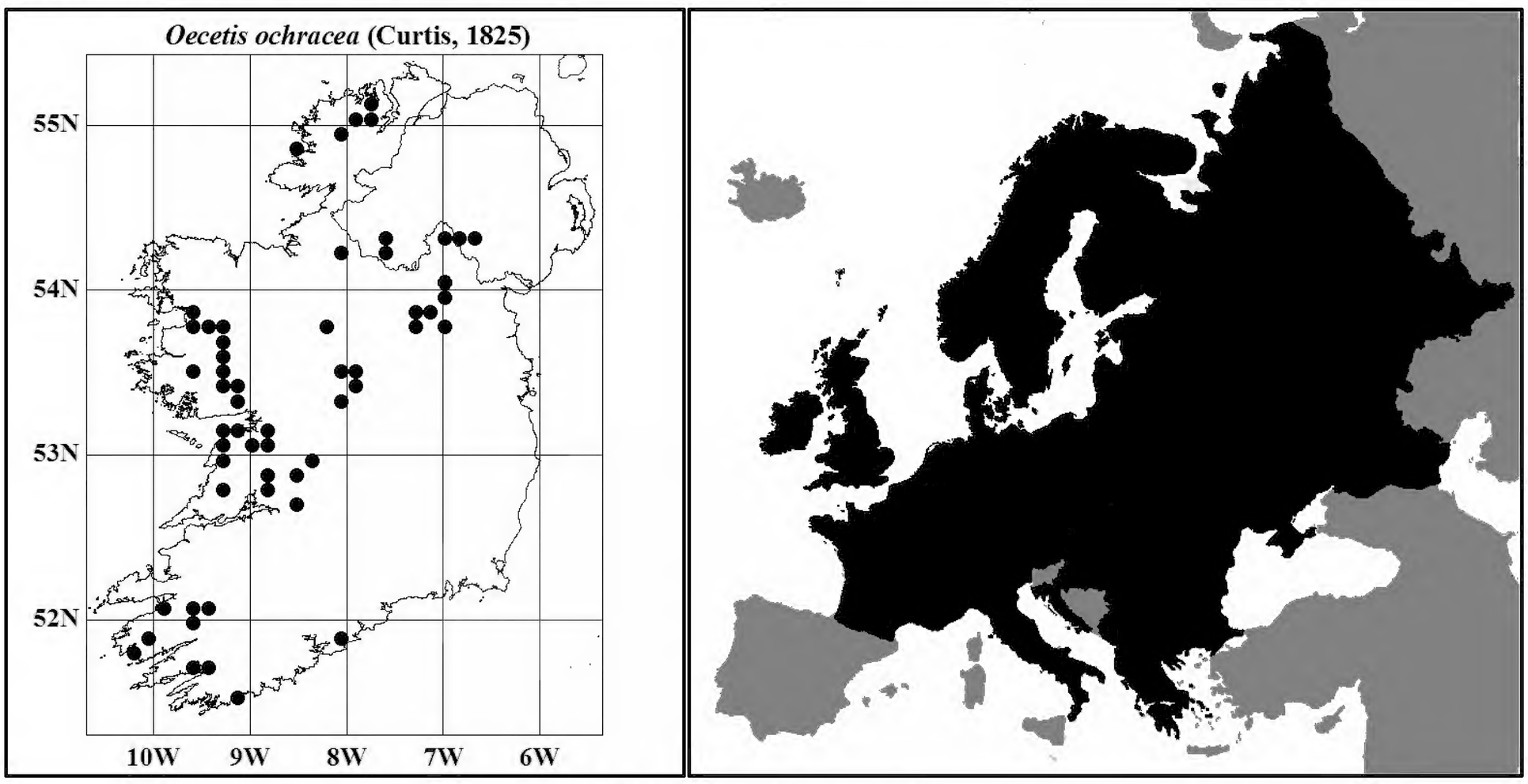
Oecetis ochracea is widely distributed in Ireland but unrecorded from the east and south-east. The cased larvae occur in lakes, ponds and slow rivers such as the Rivers Erne and Shannon. The curved case is variable in construction, often composed of

sand grains and is fragile. The larvae are predators. The species is an early coloniser of new reservoirs where the larvae eat the abundant chironomid larvae (Wallace, 1991). The large mandibles are very useful for this purpose. The species is widespread in Europe but has not been recorded from the Iberian Peninsula.

Flight period: May–September (15/25 May–15 September). An adult was taken during the period 15 to 25 May.

Counties and 10km squares: Armagh, Cavan, Clare, Cork, Donegal, Fermanagh, Galway, Kerry, Limerick, Mayo, Monaghan, Roscommon, Westmeath (13/32). The species is known from fifty-six 10km squares (56/1019).

FIGURES 344-345. Known Irish and European distributions of *Oecetis ochracea*.



Published records

King, 1888a (**KERRY:** Ardagh Laogh (V9888); Denough [Deenagh] R. (V9792); Ross Castle (V9488). **MAYO:** Ballin (L9987), Kip (M0880) and Knappagh [Knappaghbeg] (M0080) Laoghs. **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Bog of Allan [Allen] (N0639); Coosan Point (N0446) [L. Ree]; Shannon (N0243); Waterston [Waterstown] (N1045); Wineport (N0746) [L. Ree]). *Morton, 1892b* (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King and Halbert, 1910* (**ARMAGH:** Lowry's L. (H9144), etc. **CORK:** Glandore (W2235). **DONEGAL:** Clonkillybeg [L.] (C1219); Loughs Fern (C1824), Gorteen (C0818) and; Reelan (C1327). **GALWAY:** Cong (M1455) [L. Corrib]. **KERRY:** Ardagh L. (V9888); Deenagh R. (V9792); Ross Castle (V9488). **MAYO:** Ballin (L9987), Kip (M0880) and Knappagh [Knappaghbeg] (M0080) Loughs. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **ROSCOMMON:** Yew Point (N0146) [L. Ree]. **WESTMEATH:** Bog of Allen (N0639); Coosan Point (N0446) [L. Ree]; Shannon (N0243); Waterstown (N0946); Wineport (N0746) [L. Ree]). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Mosely, 1930* (**GALWAY:** Oughterard (M1343)). *Moriarty, 1972a* (unsafe larval identification (Wallace, pers. comm.)). *Moriarty, 1973a* (unsafe

larval identification (Wallace, pers. comm.)). *Moriarty, 1973b* (unsafe larval identification (Wallace, pers. comm.)). *Bracken and Murray, 1973* (**CORK:** L. Aderry (W9373); L. Reenydonegan (W0051)). *Moriarty, 1974* (unsafe larval identification (Wallace, pers. comm.)). *Speight, 1977* as *Oecetus* (**ROSCOMMON:** Yew Pt. [Point] (N0146). **WESTMEATH:** Coosan Lake [Coosan Point (N0446)]). *Moriarty, 1978* (unsafe larval identification (Wallace, pers. comm.)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan [H7007], adults). *Wallace, 1981* (**CLARE**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Millane, 2006* (**MAYO:** L. Carra (M1673), (M1777)). *McGoff and Irvine, 2009* (**MAYO:** L. Carra (M1676), (M1574)). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**DONEGAL:** L. Barra (B9312); L. Key [the grid reference of G8460 appears to be incorrect and is not included]. **GALWAY:** L. Corrib (M2541). **KERRY:** L. Nakirka (V7389). **ROSCOMMON:** Annaghmore L. (M9083)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686); Muckross Lake (V9485), (V9685); R. Inny (V5572)). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** R. Erne (H2637)). *Anon., 2015a* (**CLARE:** L. Bunny (R3896)). *O'Connor and O'Connor, 2015b* (**FERMANAGH:** Upper L. Erne (H2339), (H2731)).

Unpublished records and voucher specimens

IRELAND: adult 1866, Hardy, det. RMCL (BMNH).

WEST IRELAND: adult 1886, JJFXK, det. RMCL (BMNH).

ARMAGH: Lowry's L. (H9144), ♂ 9 July 1991, WFJ, conf. JPOC (NMI). **CAVAN: L. Ramor** (N6087), ♂♀ 2 August 1973, JPOC; **L. Sheelin**, adult 11 August 1947, JRH, (N4785), Mount Nugent, 2♂♂ 1 August 1986, CM/OSF (SINMNH), (N4686), Crover, 2♂♂ 6 August 1990, JPOC, (N4783), east shore, Tonagh, 2♂♂ 30 July 2012, MG; **L. Sillan** (H7007), lamp 2♂♂ 31 August 1972, (H7106), ♂ June 1971, ♂ 21 July 1972 (NMI), (H6906), LT 4♂♂ 31 July-1 August 1973, JPOC; **Moneen L.** (G9828), ♀ 3 August 1973, JPOC; **R. Blackwater** (N6383), below L. Ramor, ♀ 2 August 1973, JPOC (NMI). **CLARE: Ballynalacken area** (M1000), Burren, adult 2-14 June 1962, JDB (BMNH); **Doolough** (R1171), 2♂♂ 9 July1973, JPOC; **Lickeen L.** (R1891), ♂♂ 10 July 1973, JPOC; **L. Bunny** (R3797), MVLT ♂ 3 August 1996, KGMB, det. JPOC; **L. Derg** (R7186), Mount Shannon, LT ♂ 26-27 August 2003, KGMB, det. JPOC, (R6878), 6♂♂♀ 13 July & LT ♂ 2-3 September 1973, JPOC (NMI); **near Ballyvaughan** (M2207), MVLT ♂ 20-23 July 1952, JDB, det. M. A. Kirby, conf. JPOC (BMNH); **O'Briens Big Lake** (R4082), ♂ 11 July 1973, JPOC; **R. Caher** (M1608), Burren, adult 15-25 May 1961, JDB (BMNH); **Teereen L.** (R4671), LT 74♂♂11♀♀ 11-12 July 1973, JPOC. **CORK: Glandore** (W2235), ♂♀, conf. JPOC (NMI); **Glengarriff** (V9256), adult July 1947, BPB, det. JRH; **L. Aderry** (W9373),

adults June-August 1969, MK; **Reenydonegan Lake** (W0051), adults June-August 1969, MK. **DONEGAL: Portnoo** (G6998), ♂ August 1930, Canon Foster, det. JPOC (NMI). **FERMANAGH: R. Erne** (H2637), Cloonatrig, Bellanaleck, LT 2♂♂♀ 26 August 2014 (NMI). **GALWAY: Callownamuck Bog** (M2139), LT ♂ 13 August 2014, MG/CC, det. MG; **Frenchpark** (M4114), ♂ 9 July 1996, KGMB; **L. Corrib** (M1745), adults June-August 1964, MK, (M2531), Hurney's Point [near Moycullen], MVLT 2♂♂ 28 August 2003, KGMB, det. JPOC, (M2642), Keekill, LT 8♂♂ 30 July 2003, KGMB, det. JPOC, (M2930), Angliham, larva 17 May 1983, DOK, det. JPOC, (M2341), Cloonmore, ♀ 21 August 2014, CC, det. JPOC; **L. Cutra** (R4698), MVLT ♂ 23 June 1996, KGMB, det. JPOC; **L. Maumwee** [Manwee] (L9748), larvae 1996/1997, JW; **Oughterard** (M1343), adults 3-9 August 1926, MEM (BMNH). **KERRY: Derriana L.** (V6073), ♂ 26 August 1973, JPOC; **Doolough** (V9585), 2♂♂ 9 July & LT ♂ 2-3 July 1973, JPOC; **Killarney**, ♂ 5 July 1887, JJFXK (NMS), ♀ 24 June, ♂ 5 July & ♂ 8 July 1887, JJFXK, conf. JPOC (NMI); **L. Cummernamuck** (V7489), ♂ 5 July 1973, stream leaving, ♂ 5 July 1973, JPOC; **L. Currane** (V5065), Waterville, 15 September 1967, JRH, (V5267), LT 21♂♂10♀♀ 25-26 August 1973, JPOC; **L. Leane** (V9686), steps, LTS ♀ 26-27 June, ♂ 13-14 July & ♂ 29-30 July 1973, JPOC; **Muckross Lake**, (V9685), boat house, LT 2♂♂ 4-5 July 1973, (V9485), Colleen Bawn (Baun), LT 2♀♀ 27-28 July 1973, (V9685), Goleen, LT 4♂♂ 31 July-1 August 1973, all JPOC; **R. Inny** (V5674), LT ♂ 5-6 July 1973, JPOC. **LIMERICK: R. Shannon** (R6663), Castleconnell, LT ♂ 12-13 July 1973, JPOC. **MAYO: L. Carra** (M1673), adults June-August 1964, MK, (M1677), Castleburke, ♂ 28 June 2001, JPOC (NMI); **L. Mask** (M1259), (M1465), adults June-August 1964, MK; **Westport** (L9984), 2♀♀, JJFXK, conf. JPOC (NMI). **MONAGHAN: Emyvale** (H6843), ♂♂♀♀ 20-30 July [1885-6], Morton Coll., conf. JPOC (NMS); **Glasslough** (H7241), ♂ August 1892, KJM, conf. JPOC (NMS). **ROSCOMMON: R. Shannon** (M9830), larva 13 July 1972, AFF, det. JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 4 July 1888, [JJFXK], conf. JPOC (BMNH), ♂ 4 July, ♂ 10a August, ♂♀ 11 August & ♂ 15 August 1888, JJFXK, conf. JPOC (NMI).

146. *Oecetis testacea* Curtis, 1825

Oecetis testacea is widely distributed in Ireland. The cased larvae occur in lakes and rivers. The flattened larval case is robust and composed of pieces of plant material. The larvae are predators. The species is widespread in Europe.

Flight period: May–September (25 May–2 September).

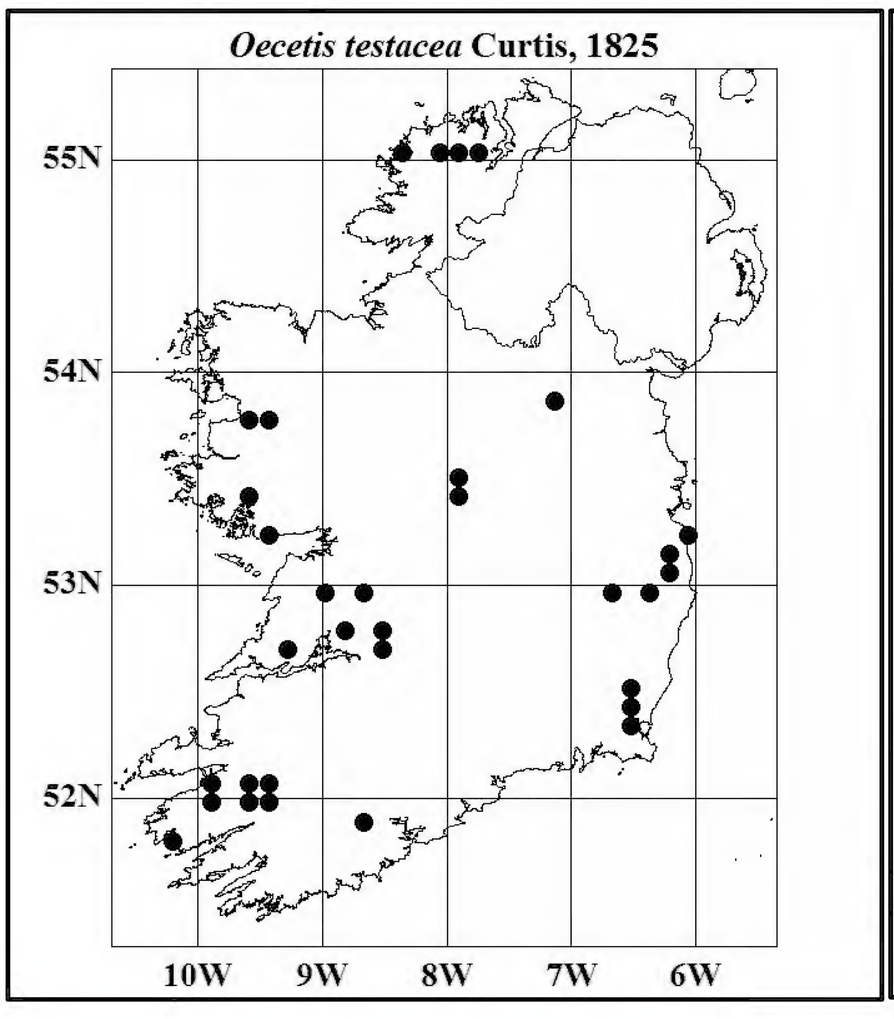
Counties and 10km squares: Cavan, Clare, Cork, Donegal, Galway, Kerry, Limerick, Mayo, Westmeath, Wexford, Wicklow (11/32). The species is known from thirty-three 10km squares (33/1019).

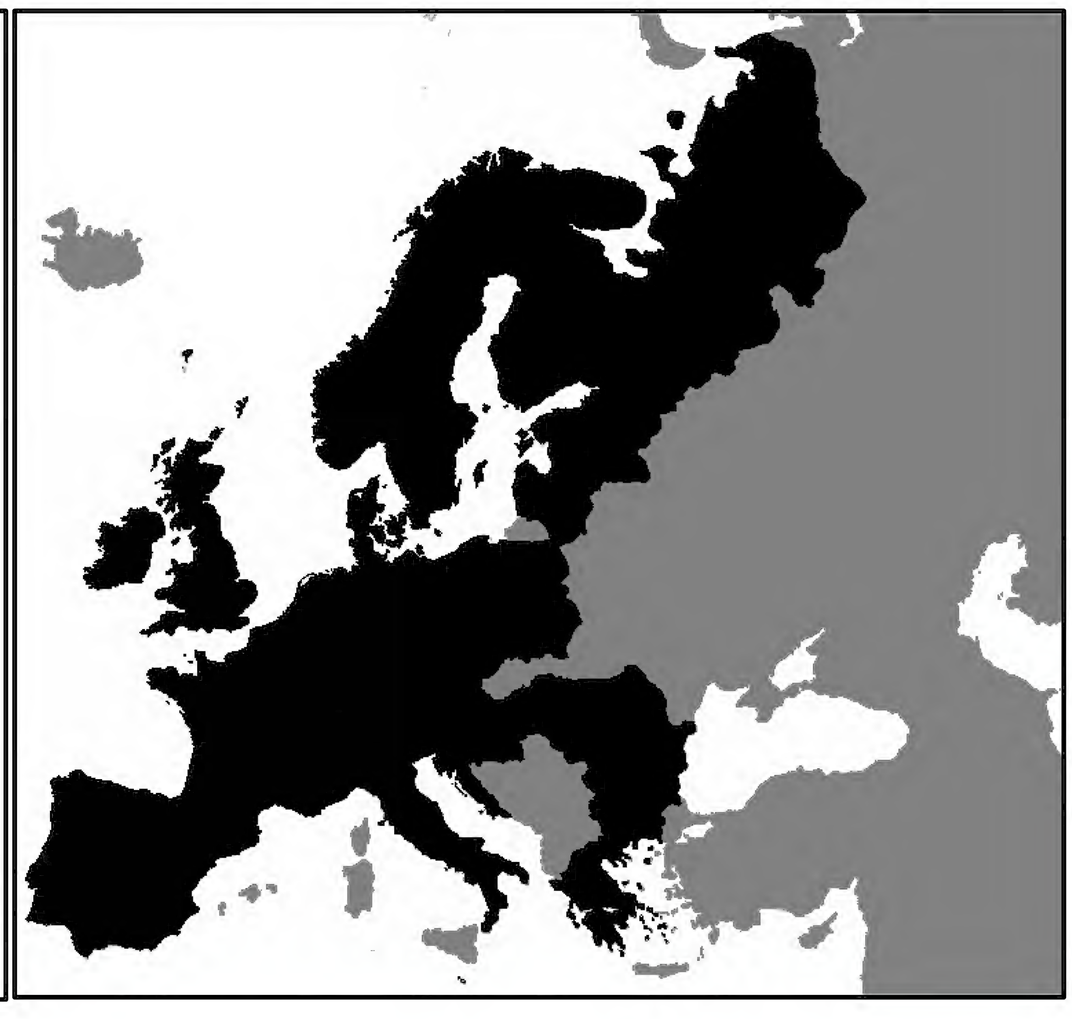
Published records

McLachlan, 1874-1884 ([**KERRY]:** Killarney). *King, 1888a* (**KERRY:** Cloghereen (V9787), Denough [Deenagh] (V9792) and Flesk (V9689) Rivers; Dinish (V9385);

Muckross Abbey (V9787); Ross Castle (V9488); Torc Cascade (V9684). **MAYO:** Mount Brown [Kinlooey] Laogh (M0381). **WESTMEATH:** Killinure (N0745); Shannon (N0341); Twy Laogh (N1043); Waterston [Waterstown] (N1045). **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *King and Halbert, 1910* (**DONEGAL:** Clonkillybeg [L.] (C1219); Cottian (C1318) [Leannan R.]; Akiboon (C0618), Gorteen (C0818) and Keel (C1524) Loughs; Glenbeagh (B9918) [Owenbeagh R.]; Lennan Bridge (C1621) [Leannan R.]. **KERRY:** Cloghereen (V9787); Dinish (V9385); Flesk (V9689) and Deenagh (V9792) Rivers; Muckross (V9786); Ross Castle (V9488); Torc (V9684). **MAYO:** Mount Brown [Kinlooey] L. (M0381). **WESTMEATH:** Killinure (N0745); Shannon (N0341); Twy L. (N1043); Waterstown (N0946). **WEXFORD:** Edenvale (T0427) [R. Sow]; Killurin (S9726) [R. Slaney]. **WICKLOW:** Enniskerry (O2217) [Glencullen R.]). *Halbert, 1912* (**MAYO:** Westport (L9984)). *Mosely, 1927* (**GALWAY:** Inverin (M0822)). *Anon., 1929* (**[GALWAY]:** centre of the great bog region of Connemara). *Mosely, 1930* (**GALWAY:** Inverin (M0822)). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Dowling, O'Connor and O'Grady, 1981* (**KERRY:** R. Caragh (V7186)). *Wallace, 1981* (**KERRY**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane; Muckross Lake; Upper Lake [Killarney]). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *O'Connor and Wise, 2004* (**KERRY:** R. Flesk). *Bradley and Kelly-Quinn, 2005* (**IRELAND:** 7 out of 207 river sites). *Kelly-Quinn et al., 2005* (**IRELAND:** rivers). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Little and Free, 2013* (**DONEGAL:** L. Anure (B8216); L. Veagh (Beagh) (C0121)). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); Muckross Lake (V9485), (V9685); R. Flesk (V9789)).

FIGURES 346-347. Known Irish and European distributions of *Oecetis testacea*.





Unpublished records and voucher specimens

CAVAN: R. Blackwater (N5992), above L. Ramor, ♂ 2 August 1973, JPOC. **CLARE: Moyree R.** (R3689), ♂ 11 July 1973, JPOC; **pond** (R6566), 2♀♀ 2 September 1973, JPOC; **R. Doonbeg** [Greygrove R.] (R1261), 4♂♂7♀♀ 9 July 1973, JPOC; **R. Rinne** (R4174), ♀ 12 July 1973, JPOC; **stream** (R5795), entering R. Bleach, ♂ 13 July 1973, JPOC. **CORK: R. Lee** (W5671), adult June, MK. **DONEGAL: Glenveagh National Park** (C0423), RLT ♀ 6 August 1982, COK, det. JPOC (NMI), (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT 3♂♂3♀♀ 10-30 July 1998, MCDS, det. JPOC; **Kilmacrenan** (C1420), adult July 1891, JJFXK (TMM) (per IDW). **GALWAY: Home Lake** (L9139), Inverbeg, adults 5-6 July 1947, common, JRH; **Inver** (L9139), adult, JRH; **Inverin** (M0822), adult 17 July-2 August 1926, MEM (BMNH). **KERRY: Crinnagh R.** (V9481), ♂♀ 4 August 1986, CM/OSF (SINMNH); **Doolough** (V9585), LT 2♂♂♀ 26 August 1987, JPOC/MAOC, det. JPOC; **Killarney**, adult July 1940, BPB, det. JRH, ♂♂♀♀ 26 June 1887, adults 3-5 & 22b July 1887, JJFXK (NMS), adults 27 June, 2 July & 11 August 1887, [JJFXK] (BMNH), ♀ 25a June, 2♂♂ 27 June & 4♀♀ 27a June, ♂ 3 July, ♂ 8 July & ♂♀ 22b July 1887, JJFXK, conf. JPOC (NMI); **Lakes of Killarney**, adult 1861, P. Bouchard, det. RMCL (BMNH); **L. Caragh** (V7292), ♂♀ 5 July & ♂♀ 27 August 1973, JPOC; **L. Currane** (V5265), ♀ 6 July 1973, JPOC; **L. Leane**, trout stomach, larva, UCD, det. JPOC, (V9686), boat house, ♂ 24 August 1973, JPOC; **Muckross Lake** (V9685), Dundag Bay, LT ♂ 27-28 July 1973, JPOC (NMI), IET ♂ 25 May 1972, UCD, det. JPOC, Goleen, larvae, June 1974, IDW; **R. Caragh** (V7184), 8♂♂6♀♀ 5 July 1973, JPOC (NMI); **stream** (V9182), beside the Tunnel, Upper Lake, Killarney, 2♂♂2♀♀ 3 July 1973, JPOC; **stream/waterfall** (V9180), Galway's Bridge, 2♀♀ 4 July 1973, JPOC; **Upper Lake, Killarney** (V9181), larva exposed rocky shore, 13 April 1973, JPOC. **LIMERICK: R. Shannon** (R6663), Castleconnell, LT 2♀♀ 12-13 July 1973, JPOC. **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂♀ 26 July 1888, JJFXK, conf. JPOC (NMI). **WEXFORD: R. Boro** (S9636), Soldiers Hole, ♂ 23 July 2015, JPOC/MAOC, det. JPOC (NMI); **Urrin R.** (S9738), Enniscorthy, ♀ 28 July 2015, JPOC/MAOC, det. JPOC; **Wexford**, 2♀♀ 11 July & ♂ 16 July 1902, JJFXK, conf. JPOC (NMI). **WICKLOW: R. Avonmore** (T1593), ♀ 21 July 1973, JPOC; **R. Bray** (O2518), ♂ 14 August 1972, JPOC; **R. Slaney** (S8892), LT 5♂♂♀ 24-25 July 1973, JPOC; **Vartry Reservoir** (O2004), Roundwood, LT ♂ 12 July 1983, HAD, conf. JPOC.

147. *Setodes argentipunctellus* McLachlan, 1877

In Ireland, *Setodes argentipunctellus* only occurs in the Killarney area (Lough Leane and Muckross Lake) of County Kerry. The known Irish larval habitat is an exposed rocky lake shore. In Britain, it is similar (stony lake shores) but the species has also been found in stony rivers (Wallace, 1991; Barnard and Ross, 2012). The curved case is composed of sand grains. The larvae seem to graze food off stones

(Wallace, pers. comm.). Whatever they eat is probably not common in winter since the small larvae in Windermere appear to hibernate in masses in the cracks between rocks and the sand in which the rocks are partially buried (Wallace, 2009). The larva has a very spiky rear end which may be used to deter attack through the posterior opening of the case. The species is widely distributed in much of Europe.

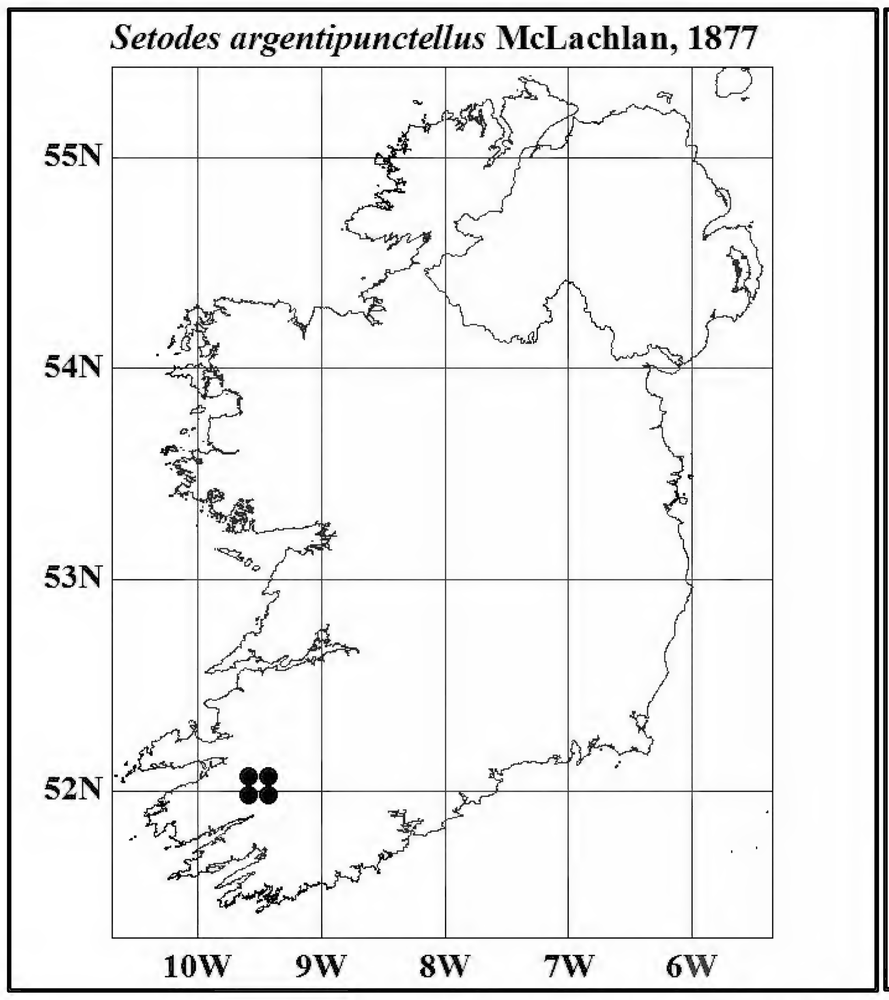
McLachlan (1877b), when describing *S. argentipunctellus* as a new species from Muckross material (and a specimen from Windermere, England), remarked that A. E. Eaton had observed the species coming up in great quantities from the lake at dusk on the 18 August 1887. King and Halbert (1910) added that it also occurred in great profusion at Ross Castle on Lough Leane. It is surprising therefore that so few specimens were taken in the light-traps which were run during the flight period in 1973 and that no adults were collected during the day using a net. Only one larva was found by the author in a qualitative collection on an exposed rocky shore in Muckross Lake and none in the quantitative collections (O'Connor and Wise, 1984). In June 1974, Ian Wallace collected seven final instar larvae and reared two adults. The sampling sites were on Lough Leane (Castlelough Bay V9686 by Brickeen Bridge V9385) and Muckross Lake (Dundag Bay V9686 and Goleen V9685). The samples were combined so the numbers at each site were not noted (Wallace, pers. comm.). Afterwards, Wise and O'Sullivan (1980) conducted an intensive study of the benthic macroinvertebrates in Ross Bay but found no specimens. Sampling took place in July and this may have been too late to find larvae.

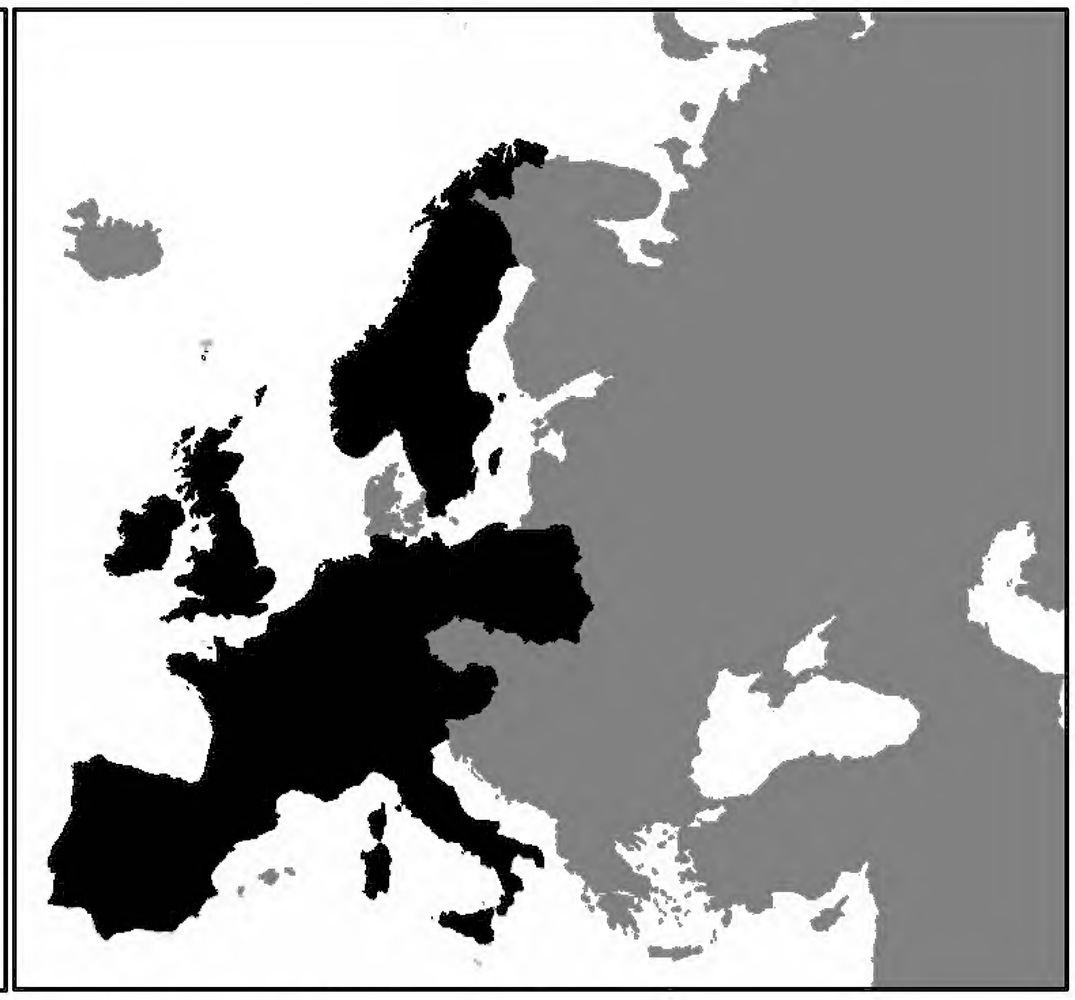
At the time that the author was running light-traps on Lough Leane and Muckross Lake, the Limnology Unit of University College Dublin was conducting studies on eutrophication problems in both lakes (1971-1975). Untreated sewage had been entering Lough Leane at Ross Castle from Killarney Town and Muckross Lake at Dundag Bay from Muckross House for many years. The findings clearly demonstrated that Lough Leane was undergoing a process of accelerating cultural eutrophication. Since then the lake, while naturally mesotrophic, has become eutrophic (highly nutrient loaded) due mainly to agricultural run-off, discharge from the Killarney Wastewater Treatment Plant and septic tanks within the lake's catchment. The effects of this process of eutrophication were initially concentrated in Ross Bay, but chemical and biological changes later extended to other parts, culminating in severe algal blooms throughout the lake during the summers of 1983, 1984 and 1997. The improvement in water quality in the 1980's was due to the introduction of phosphorus removal at the Killarney Wastewater Treatment Plant. The decline in water quality over many years at Ross Castle and Muckross may have had an adverse effect on the nearby populations of *S. argentipunctellus* but healthy populations may yet survive in unpolluted parts of Muckross Lake. Because of the species rarity in Ireland, the possible reduction in the numbers of adults since the nineteen hundreds is a matter of concern and will require further investigation (O'Connor, 2013b).

Flight period: June–August (30 June–24 August).

County and 10km squares: Kerry (1/32). The species is known from four 10km squares (4/1019).

FIGURES 348-349. Known Irish and European distributions of *Setodes argentipunctellus*.





Published records

McLachlan, 1877b ([**KERRY**]**:** Killarney, Muckross (V9786)). *McLachlan, 1874-1884* (**[KERRY]:** Killarney, Muckross (V9786) included in Part II of Supplement, p. lxviii). *King, 1888a* (**KERRY:** Muckross Abbey (V9787); Ross Castle (V9488)). *Morton, 1899* (**KERRY:** Killarney). *King and Halbert, 1910* (**KERRY:** [Killarney] Muckross Abbey (V9787) and Ross Castle (V9488). It also occurs in great profusion at Ross Castle). *Mosely, 1939* ([**KERRY:**] Killarney). *Praeger, 1950* (**KERRY:** Muckross (V9786) and Ross Castle (V9488)). *Hickin, 1967* (**[KERRY]:** Killarney). *Botosaneanu and Malicky, 1978* (**IRELAND**). *Wallace, 1981* (**KERRY:** Killarney, Lower [L. Leane] and Middle [Muckross] Lakes). *O'Connor and Wise, 1984* ([**KERRY:** L. Leane [Lower Lake], adult material; Muckross Lake, adult material. One larva was collected on an exposed rocky shore of the Muckross Lake). *O'Connor, 1987* (**KERRY:** still only known from two adjoining lakes). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** Lower [L. Leane] and Middle [Muckross] Lakes (Killarney)). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Bracken, 1998* (**KERRY:** Killarney). *Wallace, Wallace and Philipson, 2003* (**IRELAND:** Lower [L. Leane] and Middle [Muckross] Lakes (Killarney)). *Wallace, 2009* ([**KERRY**]**:** Killarney, Middle [Muckross] and Lower Lake [L. Leane]). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *O'Connor, 2013b* (**KERRY:** Doolough (V9585); L. Leane (V9686), (V9385); Muckross Lake (V9685), (V9686)).

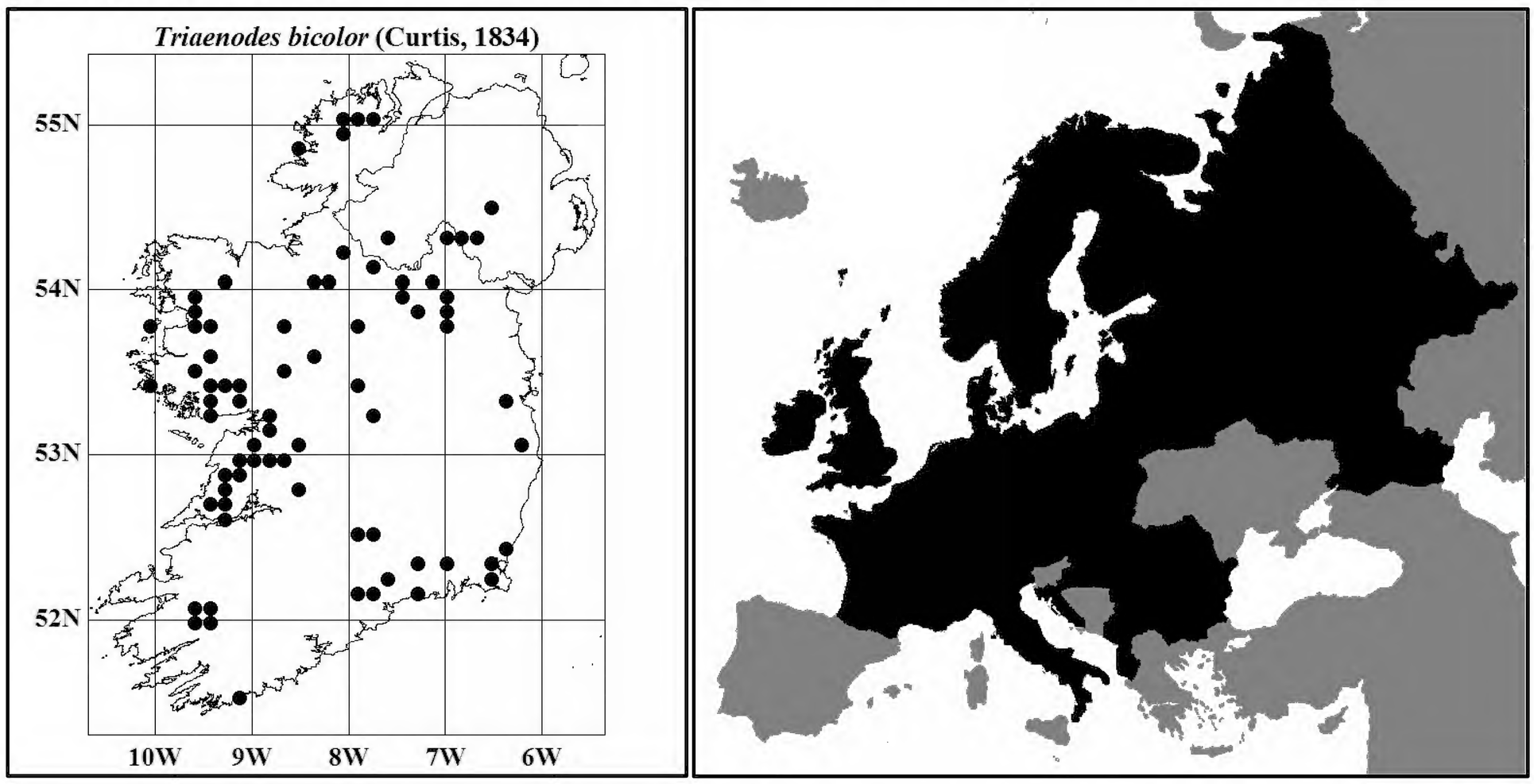
Unpublished records and voucher specimens

KERRY: Doolough (V9585), LT 5♀♀ 23-24 August 1973, JPOC (2♀♀ NMI);

Killarney, ♂♂♀♀ 4-6 July, 8 July & 11 July 1887, JJFXK (NMS), adults 30 June, 3-4 July, 6 July, 8 July & 19 July 1887, [JJFXK] (BMNH), 2 adults 30 June 1887, [JJFXK], Harwood Coll. (miscellaneous Coll., BMNH), ♂ 30 June, ♂ 2 July, 4♂♂ 3 July, 3♀♀ 4 July, 2♀♀ 5 July, 4♀♀ 6 July & 2♂♂ 8 July 1887, JJFXK, conf. JPOC (NMI), adult July 1940, BPB, det. JRH; **L. Leane** (V9686), LT ♂ 29-30 July 1973, JPOC (NMI), at the steps, larvae common under stones in reed bed, June 1974, IDW, (V9489), Ross Bay, Cherry Point, larvae, June 1974, IDW; **Muckross** (V9786), 3 paratypes 18 August 1877, AEE, det. RML (BMNH); **Muckross Lake** (V9685), Goleen, LT 3♀♀ 31 July-1 August 1973, JPOC, larvae, June 1974, IDW, Dundag Bay East, larvae common June 1974, IDW.

148. *Triaenodes bicolor* (Curtis, 1834)

FIGURES 350-351. Known Irish and European distributions of *Triaenodes bicolor*.



Triaenodes bicolor is widely distributed in Ireland. The cased larvae inhabit lakes, ponds, reservoirs, the slow moving areas of rivers, and turloughs. They have also been reported from raised bog (Hannigan and Kelly-Quinn, 2014). The larvae are mainly grazers and shredders but have been observed to also feed on Cladocera (Waringer and Graf, 2011). Well-developed hairs on the mid and hind legs enable them to swim easily between the stems of macrophytes. Swimming is aided by the light-weight and slender cases composed of a spiral of cut and shaped plant fragments. They can tolerate high water temperatures (Wiggins, 1977). The species is widely distributed in Europe but has not been recorded from the Iberian Peninsula.

Flight period: June–September (19 June–2 September).

Counties and 10km squares: Armagh, Cavan, Clare, Cork, Donegal, Dublin, Fermanagh, Galway, Kerry, Longford, Mayo, Monaghan, Offaly, Roscommon, Tipperary, Sligo, Waterford, Westmeath, Wexford, Wicklow (20/32). The species is known from seventy-five 10km squares (75/1019).

Published records

Morton, 1886 (**MONAGHAN:** Glasslough neighbourhood (H7241)). *King, 1888a* (**GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Ma'ammee [Maumwee or Manwee] Laogh (L9748). **KERRY:** Ardagh Laogh (V9888); Ross Castle (V9488). **MAYO:** Aille (M0780), Bleachyard (L9994), Cushinsheen (M0482), Knappagh [Knappaghbeg] (M0080) and Prospect (L9581) Laoghs; Newport R. (L9994). **MONAGHAN:** Glaslough (H7241)). *King and Halbert, 1910* (**ARMAGH:** Coney Island (L. Neagh) (H9364); near Armagh (H8745). **CORK:** Glandore (W2235). **DONEGAL:** Askerry (C0919) and Sproule's (C1018) Loughs; Glenbeagh (B9918) [Owenbeagh R.]; Lennan R. (C1318) [Leannan R.]. **GALWAY:** Castlekirk [Castle Kirk, L. Corrib] (M1244); Maumwee [Manwee] L. (L9748). **KERRY:** Ardagh L. (V9888); Ross Castle (V9488); Windy Gap (V9178). **MAYO:** Newport (L9893) and Westport (L9984) districts. **MONAGHAN:** Emyvale (H6843); Glaslough (H7241). **WATERFORD:** Cappagh L. (X1996). **WEXFORD:** Johnstown Castle (T0216) [small lakes]). *Halbert, 1912* (**MAYO:** Newport (L9893); Westport (L9984)). *Moriarty, 1972a* ([**GALWAY**]**:** L. Corrib, south (M2434)). *Moriarty, 1973a* (**GALWAY:** L. Corrib (M2030) = [M2434]). *Botosaneanu and Malicky, 1978* (**IRELAND**). *O'Connor and Bracken, 1980a* (**CAVAN:** L. Sillan [H6906, adults should read larvae]). *Wallace, 1981* (**KERRY**). *O'Connor and Wise, 1984* (**KERRY:** L. Leane (V9686); Muckross Lake). *O'Connor, 1987* (**IRELAND:** widespread). *Wallace, Wallace and Philipson, 1990* (**IRELAND**). *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *White and Irvine, 2003* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**IRELAND**). *Becerra Jurado et al., 2009* as *T. biocolor* (**TIPPERARY:** ponds (S0540), (S1640). **WATERFORD:** ponds (S2510), (S4623), (S5202). **WEXFORD:** pond (T0830)). *Donohue et al., 2009* (**IRELAND**). *Porst and Irvine, 2009b* (**GALWAY:** Caranavoodaun turlough (M4515); Termon turlough (R4097)). *Porst et al., 2012* (**GALWAY:** turloughs). *O'Connor and Nelson, 2012* (**IRELAND**). *Barnard and Ross, 2012* (**IRELAND**). *Drinan, O'Halloran and Harrison, 2013* as *Trianodes* (**CLARE:** upland lake (R5088), 273m. **GALWAY:** upland lake (M6701), 183m, (M0430), (M0929) (M0229), (M0927), (M0927)). *Little and Free, 2013* (**DONEGAL:** Kiltooris Lake (G6797); L. Barra (B9312)). *O'Connor, 2013b* (**KERRY:** L. Leane (V9686)). *Baars et al., 2014* (**IRELAND:** recorded in 1 of 12 upland peatland lakes). *Hannigan and Kelly-Quinn, 2014* (**IRELAND:** raised bog). *O'Connor and O'Connor, 2014b* (**FERMANAGH:** Mill L. (H2438)). *Anon., 2015a* (**DUBLIN:** Liffey Valley Park, Waterstown (O0835). **MAYO:** Clonbur Woodland (M0957); L. Mask (M0957). **OFFALY:** L. Boora Parklands - canal (N1718)).

Unpublished records and voucher specimens

ARMAGH: Armagh (H8745), ♂ 23 July 1891, WFJ, conf. JPOC (NMI). **CAVAN: Corrakane L.** (H4000), small lake, ♂ 3 August 1981, JPOC/MAOC, det. JPOC, LT ♂ 4-5 August 1973, JPOC; **Drumad L.** (H7102), 5♂♂2♀♀ 1 August 1973, JPOC (NMI); **Drummary L.** (H3712), 2♀♀ 4 August 1973, JPOC; **L. Brackley** (H1921), ♂

4 August 1973, JPOC; **L. Coragh** (H6114), Cootehill, larvae 11 July 1965, JRH; **L. Cuilcagh** (N6389), 4♂♂♀ 1 August 1986, CM/OSF (SINMNH), 6♂♂ 10 August 1972, ♂ 31 August 1986, JPOC; **L. Drunad** (H7102), ♂♂♀ 1 August 1973, JPOC (NMI); **L. Mullagh** (N6785), larva reed bed, 3 April 1973, 2♂♂ 10 August 1972, JPOC; **L. Oughter** (H3308), ♀ 4 August 1973, JPOC, larva 1996/1997, JW; **L. Sillan** (H6906), reed bed, 2 larvae 26 March 1973, JPOC; **Moneen L.** (G9828), 6♂♂7♀♀ 3 August 1973, JPOC; **Muddy L.** (H7205), ♂ 1 August 1973, JPOC; **pond** (N4787), near L. Sheelin, Kilafassey, larvae June 1947, adult ♀ 10 August 1947, JRH; **pond** [L. Aush] (H6301), 12♂♂ 2 August 1973, JPOC; **R. Annalee** (H7205), below L. Sillan, ♂ 1 August 1983, JPOC. **CLARE: Creegh R.** (Q9966), ♂ 29 August 1973, JPOC; **Derrygeeha L.** (R1556), ♂ 8 July & ♂2♀♀ 29 August 1973, JPOC; **Doolough** (R1171), 4 larvae 9 July 1973, JPOC; **Dromore Lake** (R3586), larvae 1996/1997, JW; **Knockalough** (R1463), ♂ 29 August 1973, JPOC; **L. Ballycullinan** (R2885), larva 1996/1997, JW; **L. Bunny** (R3797), Burren, larvae 28 May 1984, JPOC/MAOC, det. JPOC; **L. Graney** (R5691), larvae 1996/1997, JW; **L. Inchiquin** (R2789), 2♂♂ 10 July 1973, JPOC; **L. Mooghna** (R1384), 2♂♂ 9 July 1973, JPOC; **pond** (R6566), 21♂♂♀ 12 July 1973, ♂♀ 2 September 1973, JPOC. **CORK: Glandore** (W2235), ♂, conf. JPOC (NMI). **DONEGAL: Glenveagh National Park** (C0323), *Salix* swamp near Owencarrow R. & L. Beagh, MT ♂ 10-30 July 1998, MCDS, det. JPOC; **Kilmacrennan** (C1420) [Leannan R.], adults June & July 1891, JJFXK (TMM) (per IDW). **DUBLIN: R. Liffey** (O0635), ♂ 14 August 1976, JPOC. **FERMANAGH: Mill L.** (H2438), near Bellanaleck, LT 2♂♂2♀♀ 26 August 2014 (NMI), LT ♂ 1 September 2015, JPOC/MAOC, det. JPOC. **GALWAY: Dunkellin R./Rahasane Turlough** (M4719), larva 28 June 1984, PB, det. JPOC; **Hollygrove Lake** [Ballaghdacker L.] (M7857), 2♂♂ 8 August 2001, JPOC; **Inverin** (M0822), ♂ 17 July-2 August 1926, MEM, conf. JPOC (BMNH); **L. Corrib** (M2741), Cloonmore, LT ♂ 6 August 2014, MG/CC, det MG; **L. Lettercraffroe** (M0537), larva 1996/1997, JW; **Ma'am** [Maam] (L9653), ♀, JJFXK, conf. JPOC (NMI); **Maumeen L.** (L6541), Ballyconeely, ♂ 31 July 1994, KGMB, det. JPOC (NMI); **Oughterard** (M1343), adults 3-9 August 1926, MEM (BMNH); **Summerville L.** (M6049), picnic area, 3♂♂ 25 July 2012, MG. **KERRY: Killarney**, 2♂♂ 24 June, ♂ 25a June, ♀ 26 June & ♂ 29a June 1887, JJFXK, conf. JPOC (NMI), ♂♀ August, Morton Coll. (NMS), adult July 1946, BPB, det. JRH; **L. Leane** (V9686), larva reed bed, 13 April 1973, JPOC, larva July 1972, EJW, det. IDW (NMI), larva June 1972, EJW, det. IDW (NMI); **Muckross** (V9786), adult 18 July 1877, AEE, det. RMCL (BMNH); **Muckross Lake** (V9685), reed bed, larva 10 April 1973, boat house, 3♂♂ 24 August 1973, JPOC, Goleen, larva June 1974, IDW; **pond** (V9080), 11♂♂2♀♀ 4 July 1973, JPOC. **LONGFORD: R. Shannon** (N0684), north of L. Forbes, 3♂♂ 16 July 1978, JPOC. **MAYO: Clare Island** (L6985), larvae, peaty lakes, SF (det. IDW), MT ♂♀ 13 July 1998, SF, conf. JPOC (NMI); **L. Conn** (G1516), adults July-August 1964, MK; **L. Feenagh** (L9699), adults July-August 1964, MK; **L. Moher** (L9777), larvae

1996/1997, JW; **Westport** (L9984), 2♀♀, JJFXK, conf. JPOC (NMI). **MONAGHAN: Emyvale** (H6843), ♂ 20-30 July [1885-6], Morton Coll., conf. JPOC (NMS); **Glasslough** (H7241), ♂♂♀♀ August 1892, KJM, conf. JPOC (NMS). **ROSCOMMON: Cornacarta L.** (G8309), adults July-August 1964, MK; **L. O'Flynn** (M5878), ♂ 16 August 2001, JPOC. **SLIGO: L. na Léibe** (L. Labe) (G7212), adults July-August 1964, MK. **WATERFORD: Cappoquin** (X0999), ♂♀ 5 August 1902, JJFXK, conf. JPOC (NMI). **WESTMEATH: Athlone** (N0341) [R. Shannon], ♂ 1a August 1888, JJFXK, conf. JPOC (NMI). **WEXFORD: near Whitestown** (T0517), ponds, larvae 9 June 1978, JPOC/MAOC, det. JPOC; **small lake** (S7218), near J. F. Kennedy Park, ♂♂♀♀ 19 June 1990, JPOC. **WICKLOW: L. Dan** (O1502), larva 1996/1997, JW; **Vartry Reservoir** (O1903), ♂ 1 August 1972, JPOC.

[*Ylodes conspersus* (Rambur, 1842

Ylodes conspersus was deleted from the Irish list as the voucher specimens had been misidentified. They were actually *Y. reuteri* (O'Connor, 1979).

Published records

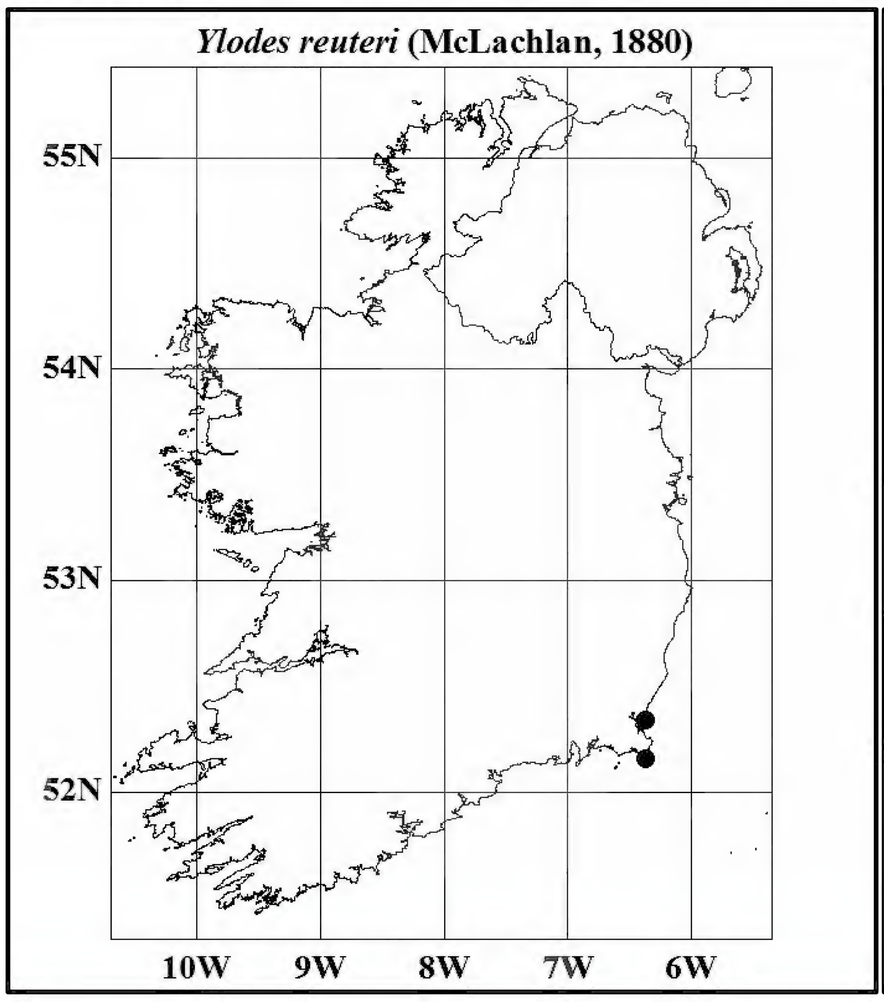
King and Halbert, 1910 as *Triaenodes conspersa* (WEXFORD: Rosslare [Rosslare Strand] [misidentification]). *Botosaneanu and Malicky, 1978* as *Triaenodes* (IRELAND). *O'Connor, 1979* (WEXFORD: Rosslare. *Triaenodes conspersa* reidentified as *T. reuteri*). *O'Connor and Nelson, 2012* (listed as a misidentification).

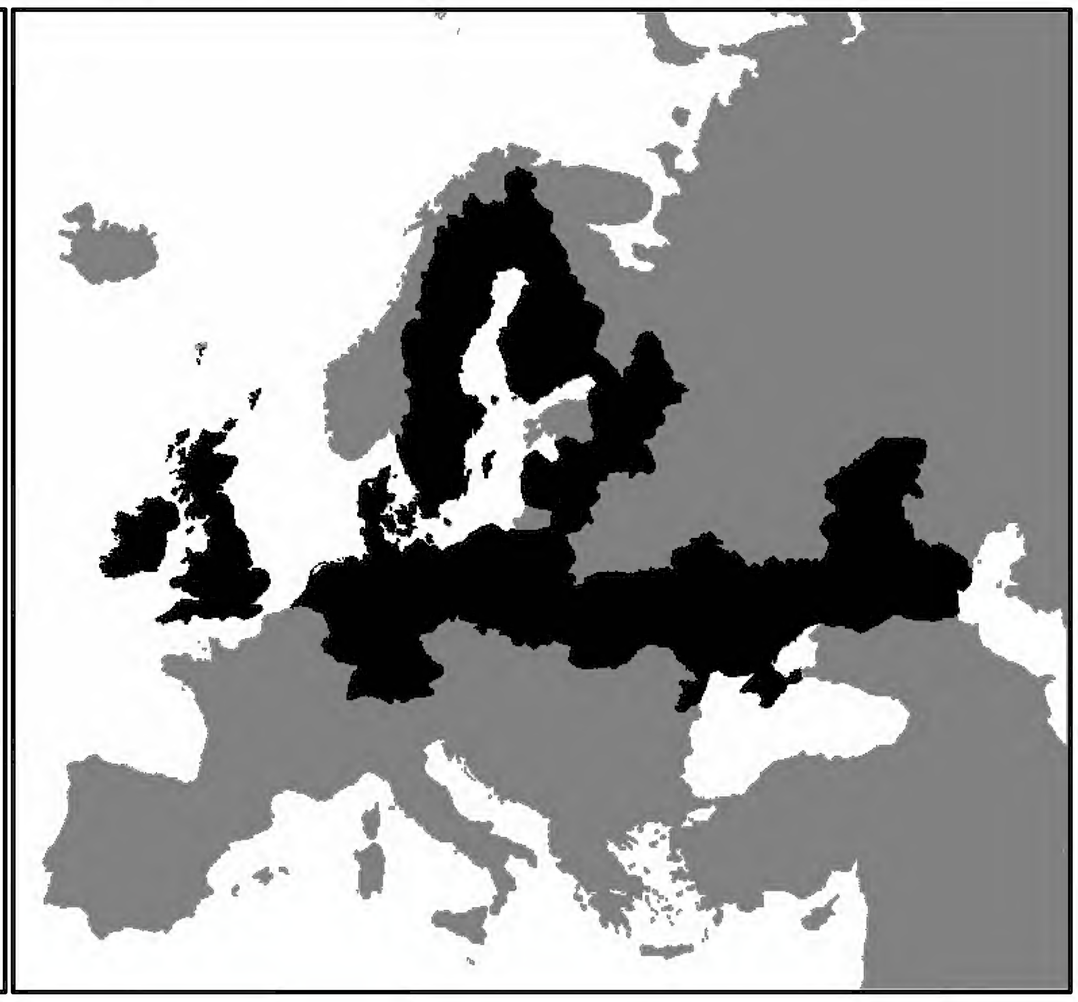
Unpublished records and voucher specimens

WEXFORD: Wexford [Rosslare], ♂2♀♀ 14 July 1902, JJFXK (det. JPOC as *T. reuteri*), ♀ (det. JPOC *as T. reuteri*, conf. PCB) (all NMI).]

149. *Ylodes reuteri* (McLachlan, 1880)

FIGURES 352-353. Known Irish and European distributions of *Ylodes reuteri*.





Ylodes reuteri is a local and rare Irish species only known from the south-east. Originally misidentified as *Triaenodes conspersa*, adults were collected in 1902 at Rosslare, County Wexford by J. J. F. X. King. At that time, Rosslare referred to Rosslare Strand and not Rosslare Harbour which was only developed in 1906. To-date, no further adults have been found despite several searches. However suitable habitat may exist at the Rosslare Intake, an area not yet visited. Some 12km away, Brenda Healy found larvae in low salinity at Bunargate Pool, Lady's Island Lake, County Wexford. The cased larvae, which can swim, inhabit brackish water. Like *Triaenodes*, swimming is aided by a light-weight and slender case composed of a spiral of cut and shaped plant fragments. The species has a restricted European distribution. It also occurs in Northern America (Wiggins and Parker, 1997).

Flight period: July (14 July). Irish adults were taken only on one occasion. Barnard and Ross (2012) also give the British flight period as July.

County and 10km squares: Wexford. The species is known from two 10km squares (2/1019).

Published records

O'Connor, 1979 as *Triaenodes* (**WEXFORD:** Rosslare [Rosslare Strand] (T0718)). *Wallace, 1981* as *Triaenodes* (**WEXFORD**). *O'Connor, 1987* as *Triaenodes* (**WEXFORD:** Rosslare [Rosslare Strand] [T0718]). *Wallace, Wallace and Philipson, 1990* (**IRELAND:** Co. Wexford). *Healy, 1997* (**WEXFORD:** Bunargate Pool near Lady's Island Lake (T0805), larvae rare in low salinity [sometime between 1975-1991 (Healy, pers. comm. to JPOC)]. *Ashe, O'Connor and Murray, 1998* (**IRELAND**). *Wallace, Wallace and Philipson, 2003* (**WEXFORD**). *O'Connor and Nelson, 2012* (**WEXFORD**). *Barnard and Ross, 2012* (**IRELAND**).

Unpublished records and voucher specimens

WEXFORD: Wexford [Rosslare] (T0718), ♂2♀♀ 14 July 1902, JJFXK, det. JPOC (misidentified as *Triaenodes conspersa* by JJFXK), ♀ conf. PCB (NMI).

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The Atlas

Ireland has considerable freshwater resources, comprising more than 16,000km of main river channel, 10,000km of tributaries and streams and over 200,000ha of standing waters (Giller, 1998). When considering the distribution of the various species, it is important to realise the influence of topography (Fig. 354). The topography of Ireland features a hilly central lowland composed of limestone surrounded by a broken border of coastal mountains which vary greatly in geological structure. The ridges of the south are composed of old, red sandstone separated by limestone river valleys. These valleys appear as deep green grooves that tend to run in an east-west direction. Granite predominates in the mountains of Galway, Mayo, and Donegal in the west and north-west, as well as in Counties Down and Wicklow on the east coast. A basalt plateau covers much of the north-east of the island.

The central plain, broken in places by low hills, is extensively covered with glacial deposits of clay and sand. It has considerable areas of bog and numerous lakes. The island has seen at least two general glaciations. Everywhere, ice-smoothed rock, mountain lakes, glacial valleys, and deposits of sand, gravel and clay mark the passage of the ice <http://earthobservatory.nasa.gov/IOTD/view.php?id=5343>.

Many Irish species are widely distributed. However others are affected by the topography. Species such as *Agrypnia pagetana*, *Grammotaulius nigropunctatus*, *Limnephilus decipiens*, *L. fuscinervis*, *L. nigriceps* and *Molanna albicans* are associated with the central plain. By contrast, *Rhyacophila munda*, *Glossosoma conformis*, *Wormaldia occipitalis* and *Diplectrona felix* are mainly restricted to the mountainous areas. Several species have not been found or are scarce in the south and south-east (e.g. *Holocentropus dubius*, *Agrypnia obsoleta*, *A. varia*, *Phryganea grandis*, *Limnephilus binotatus*, *L. elegans*, *L. griseus*, *Mesophylax impunctatus*, *Athripsodes commutatus, Ceraclea nigronervosa*, *C. senilis* and *Oecetis furva*). Others are associated with the limestone areas (e.g. *Psychomyia fragilis* and *Tinodes maculicornis*).

The bogs were the last wilderness to take shape in the Irish landscape in the wake of the Ice Age. There are two main types: blanket bog and raised bogs. The first detailed survey was carried out between 1810 and 1814. The surveyors calculated that the total peatland area in Ireland then was almost 1,200,000ha, of which 650,000ha was raised and low level blanket bog and 550,000ha was mountain blanket bog (van Eck *et al.*, 1984). Due to development, drainage and the harvesting of peat for fuel, this vast area has been considerably reduced. There are now 269,267ha of peatlands of conservation interest in Ireland, representing approximately 23% of the original peatland area in the country (Anon., 2015c). This massive loss of wetland habitat, over the last two hundred years, must have had a devastating effect on the populations of some caddisfly species (e.g. *Oligotricha striata*, *Limnephilus coenosus*, *L. elegans*, and possibly *L. pati*).

FIGURE 354. The topography of Ireland (© NASA).

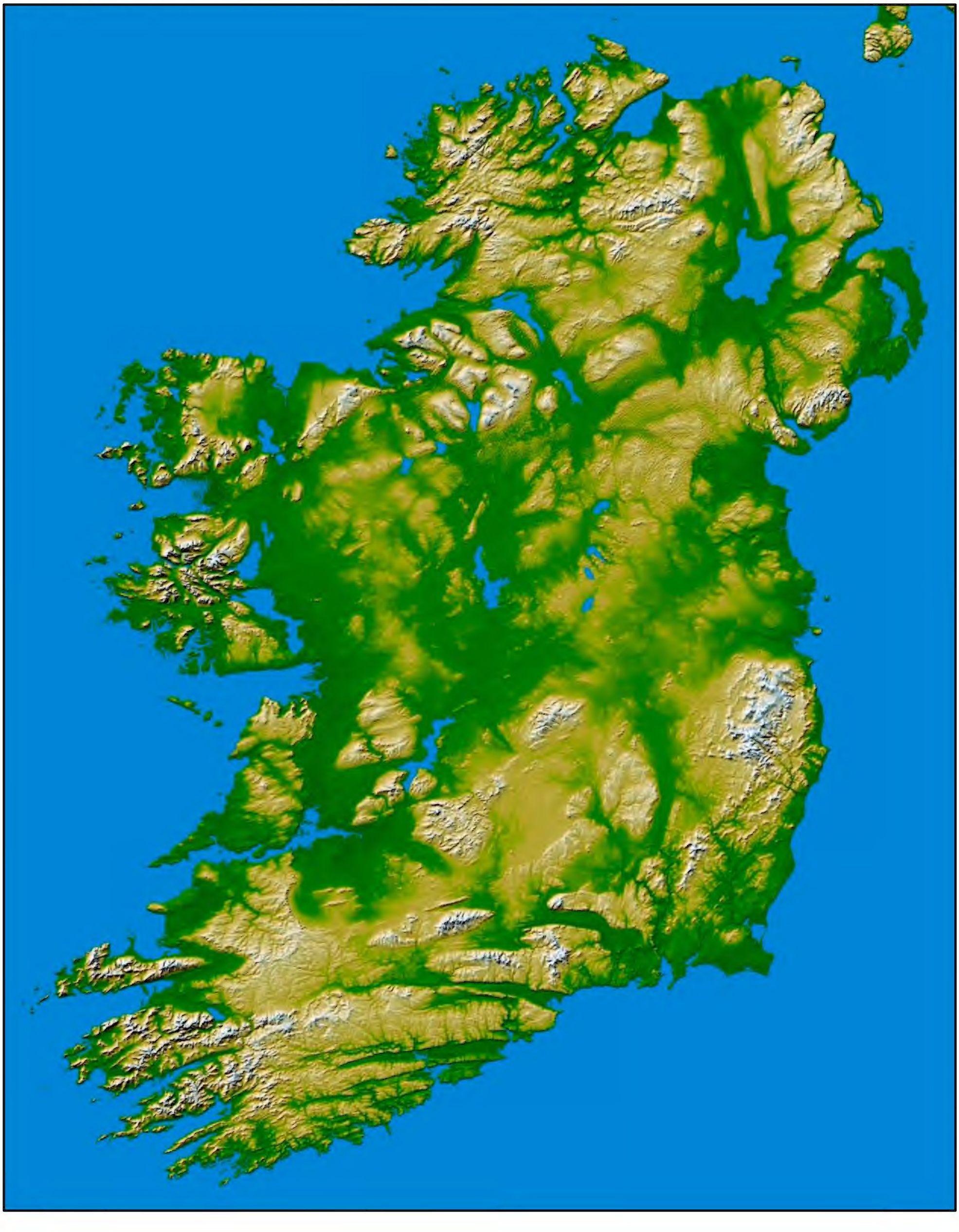


FIGURE 355. Known Irish distribution of *Rhyacophila dorsalis* (Curtis, 1834).

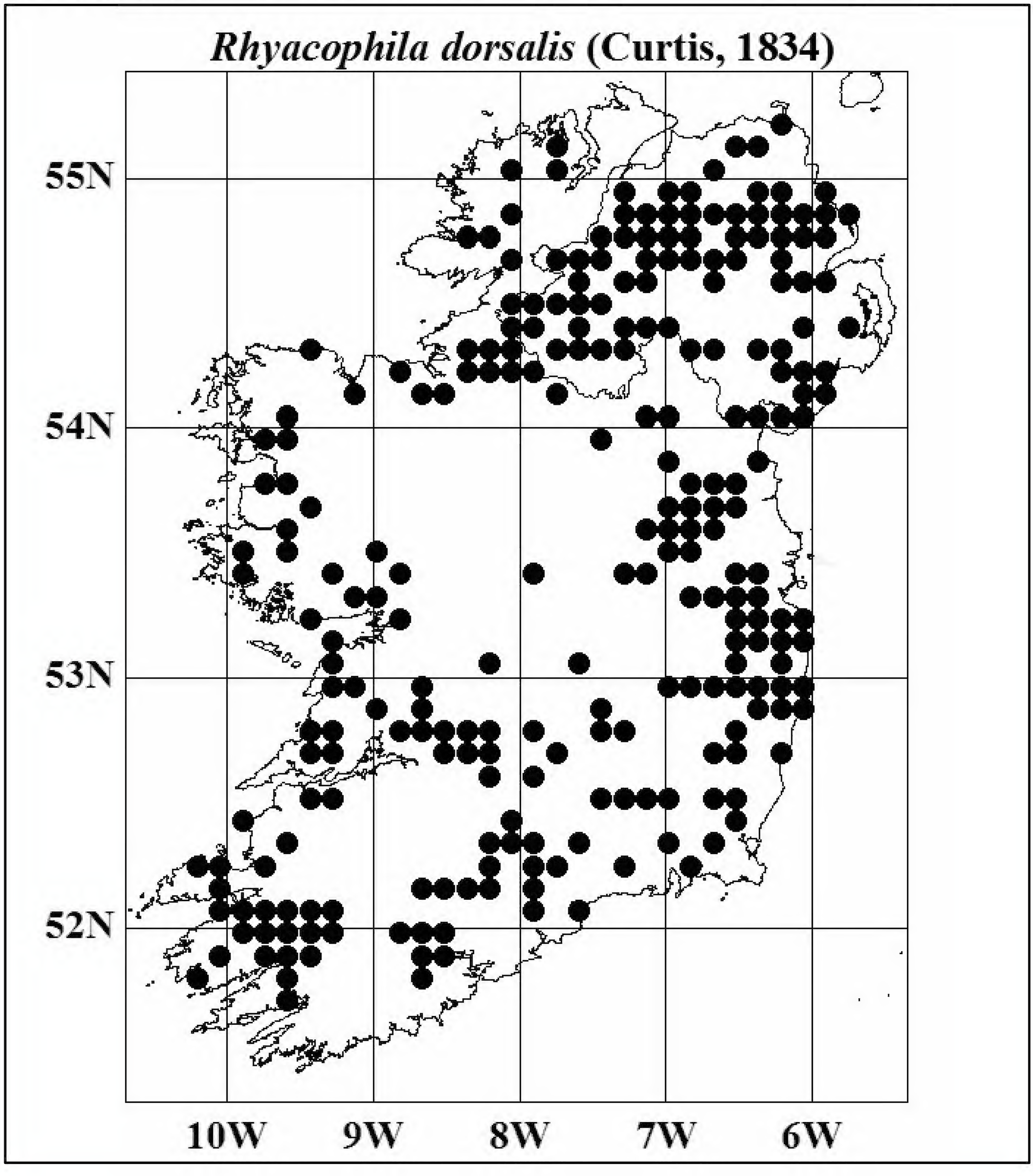


FIGURE 356. Known Irish distribution of *Rhyacophila munda* McLachlan, 1862.

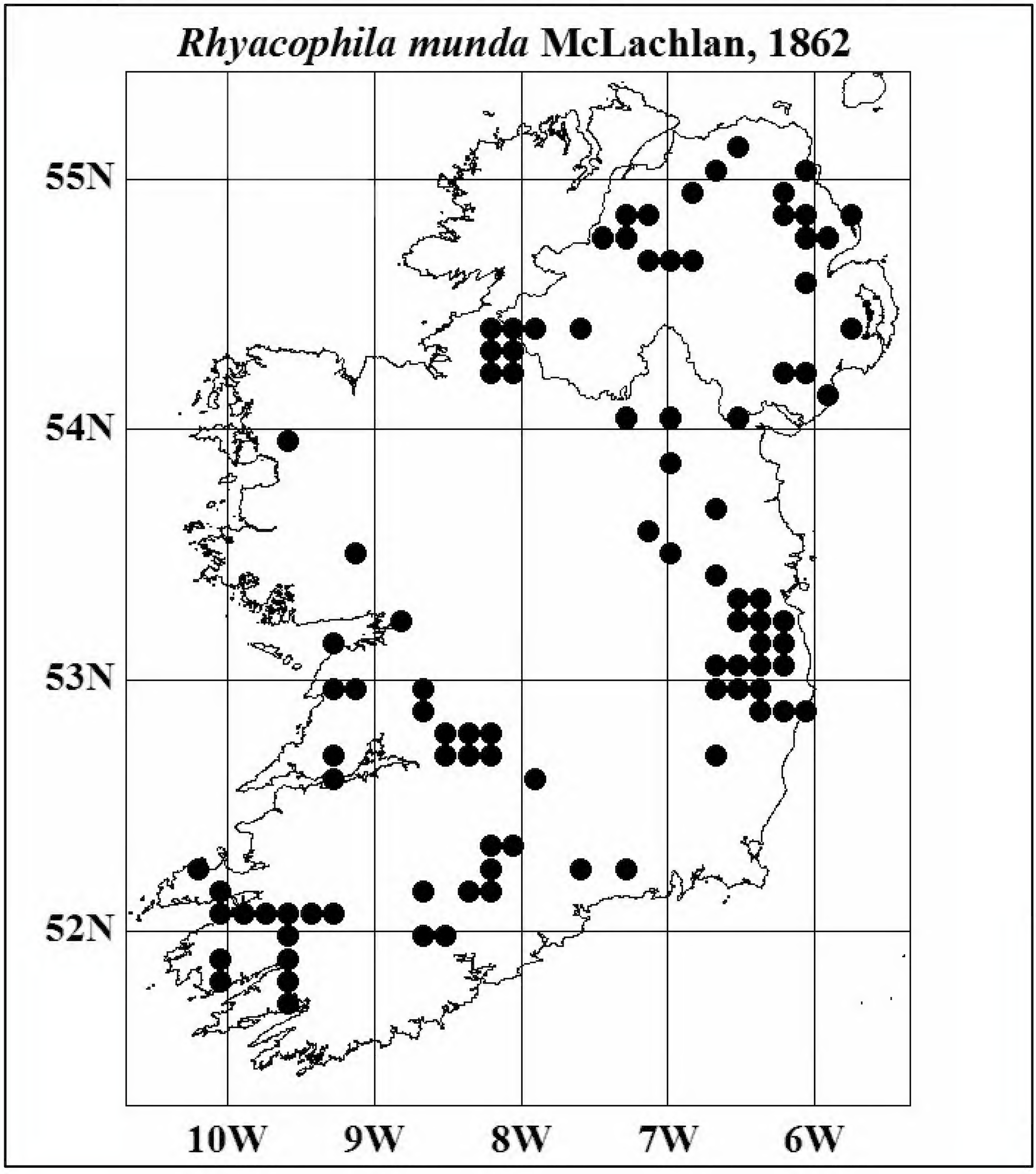


FIGURE 357. Known Irish distribution of *Agapetus delicatulus* McLachlan, 1884.

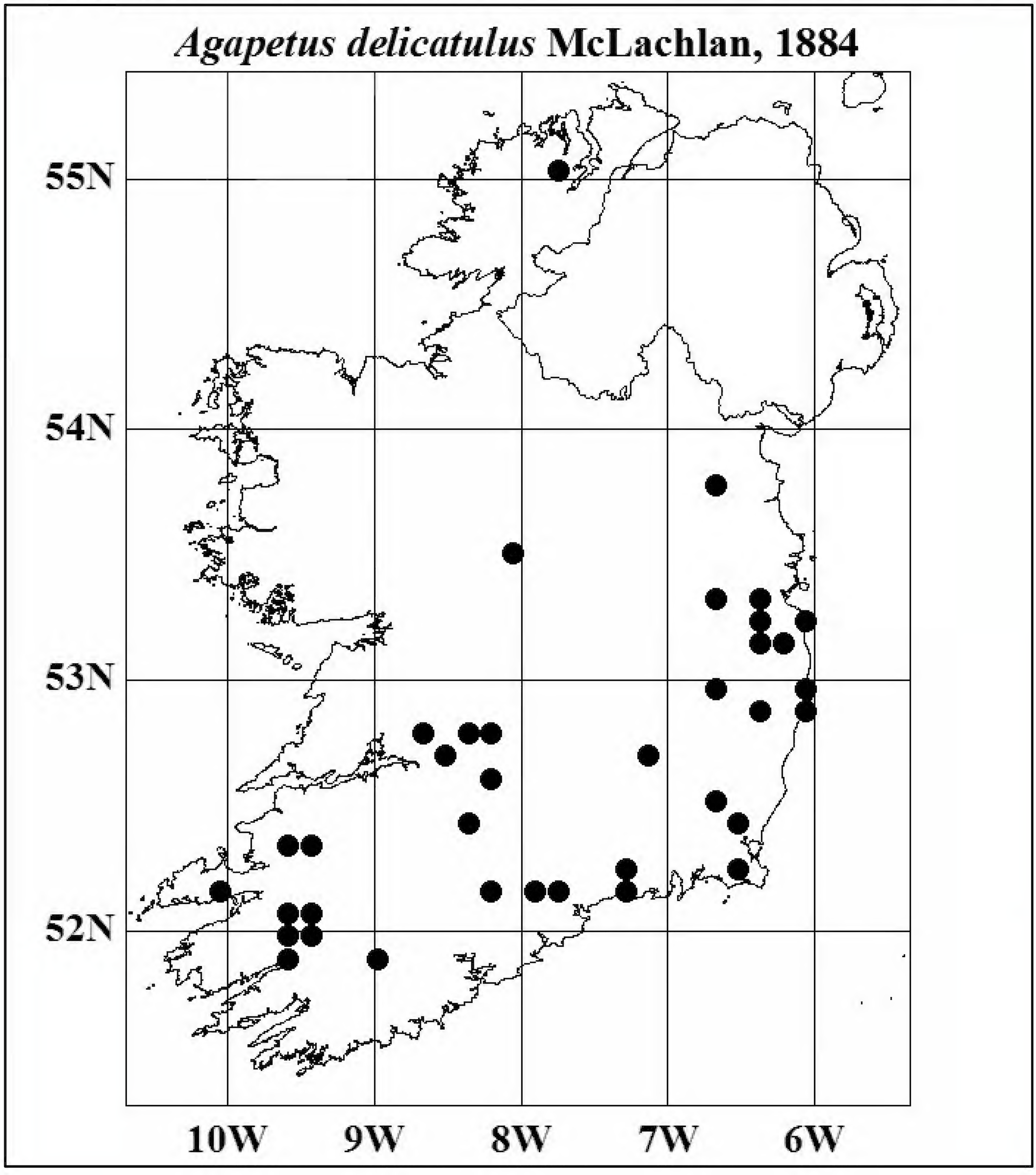


FIGURE 358. Known Irish distribution of *Agapetus fuscipes* Curtis, 1834.

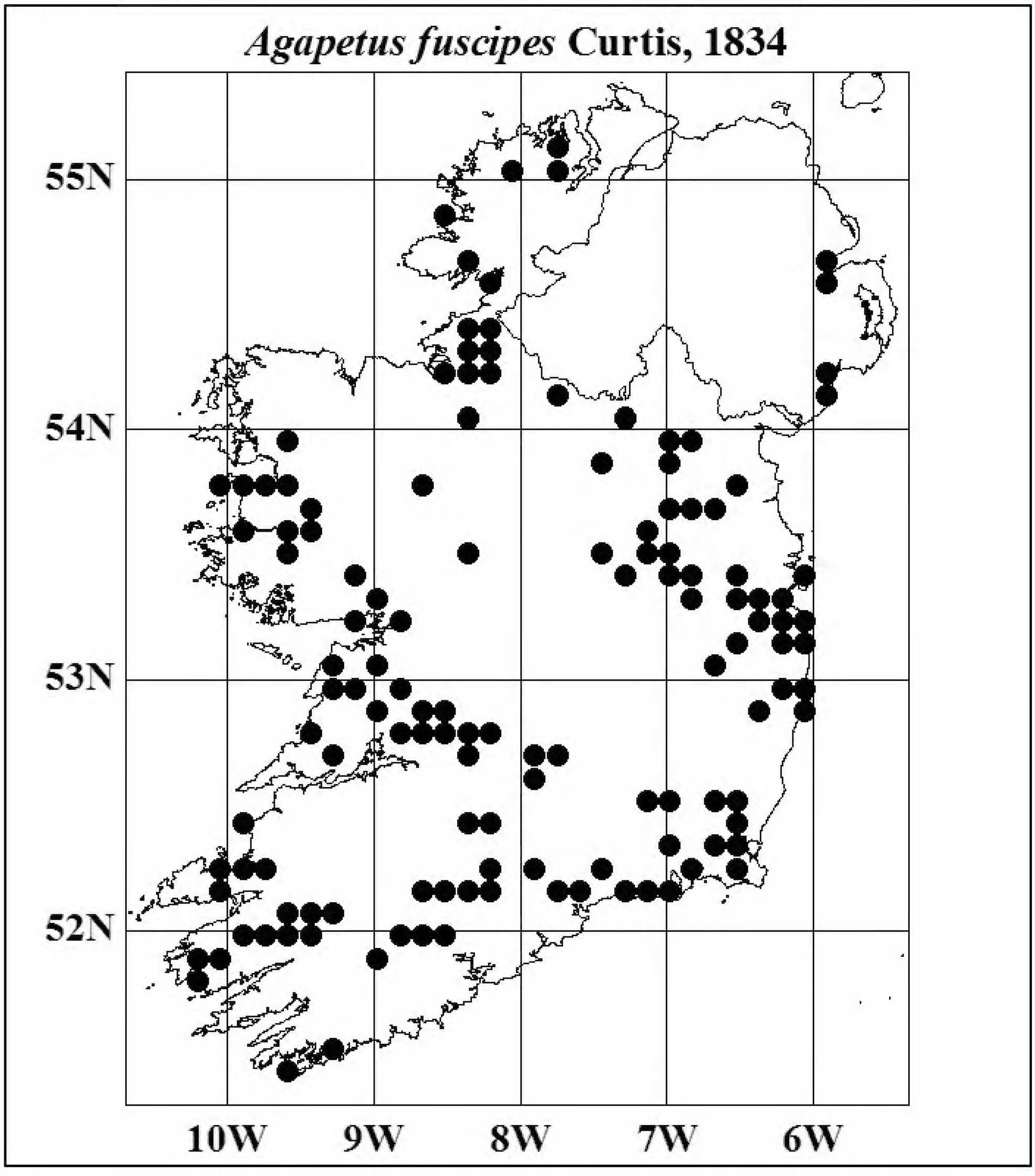


FIGURE 359. Known Irish distribution of *Agapetus ochripes* Curtis, 1834.

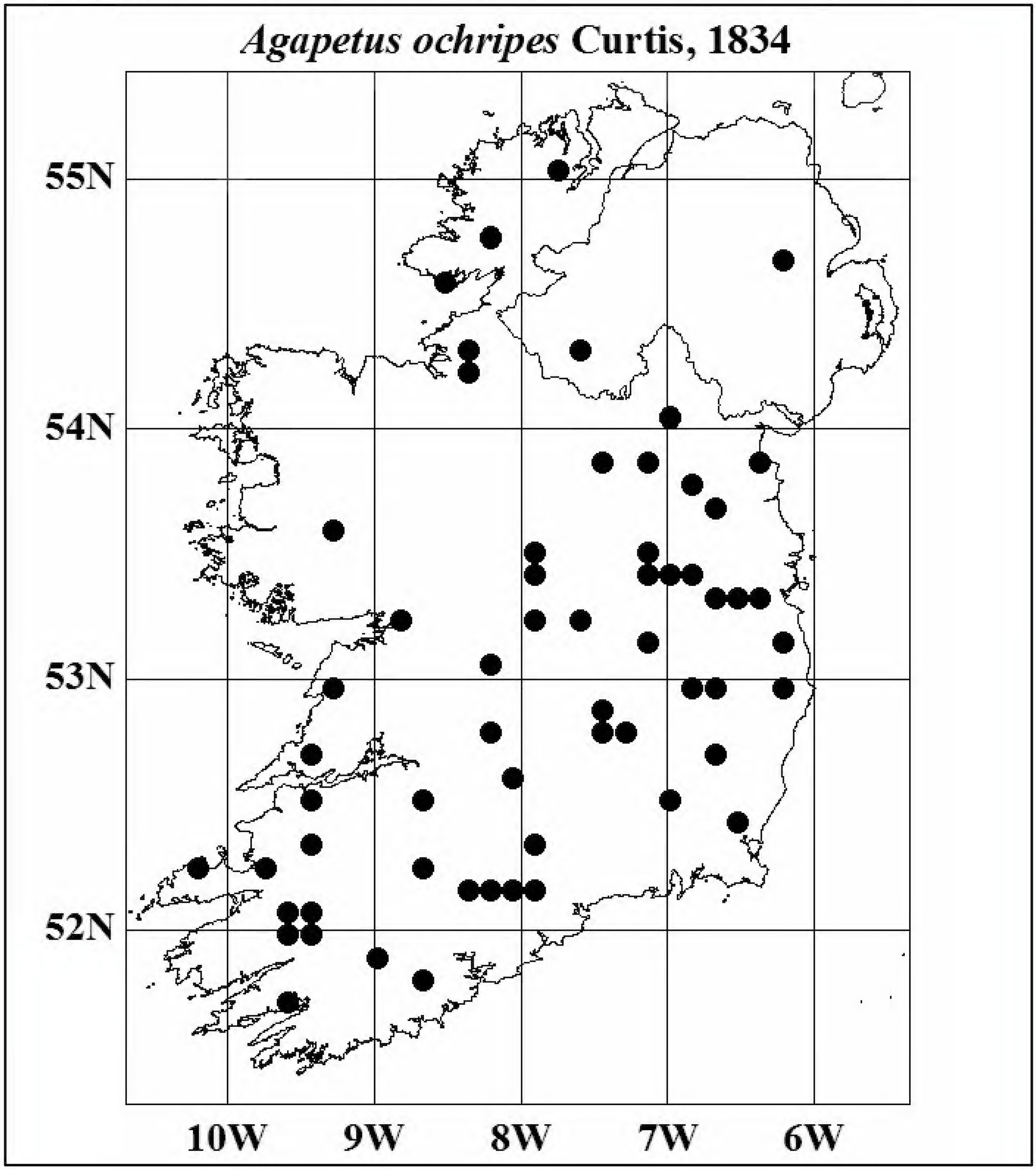


FIGURE 360. Known Irish distribution of *Glossosoma boltoni* Curtis, 1834.

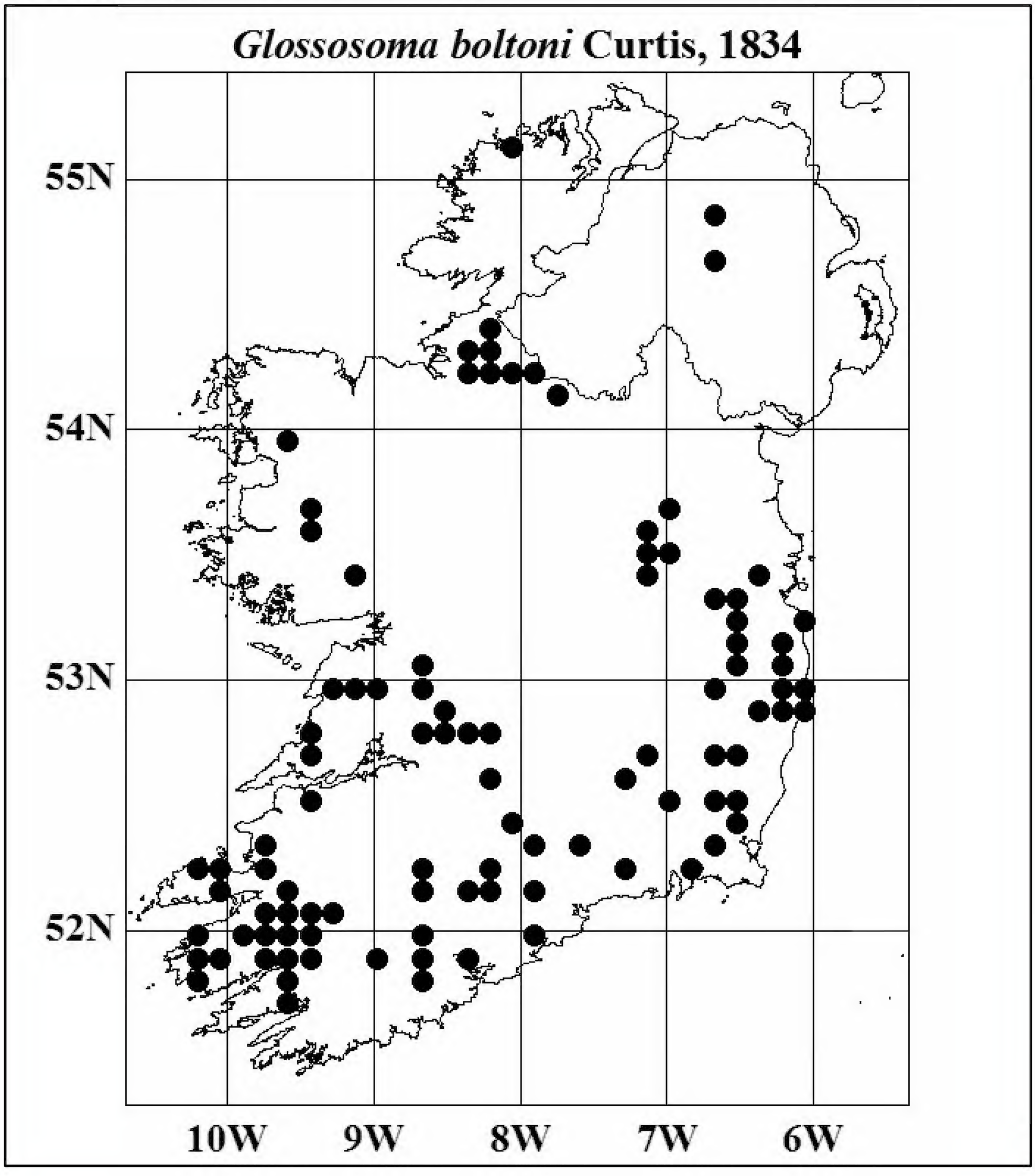


FIGURE 361. Known Irish distribution of *Glossosoma conformis* Neboiss, 1963.

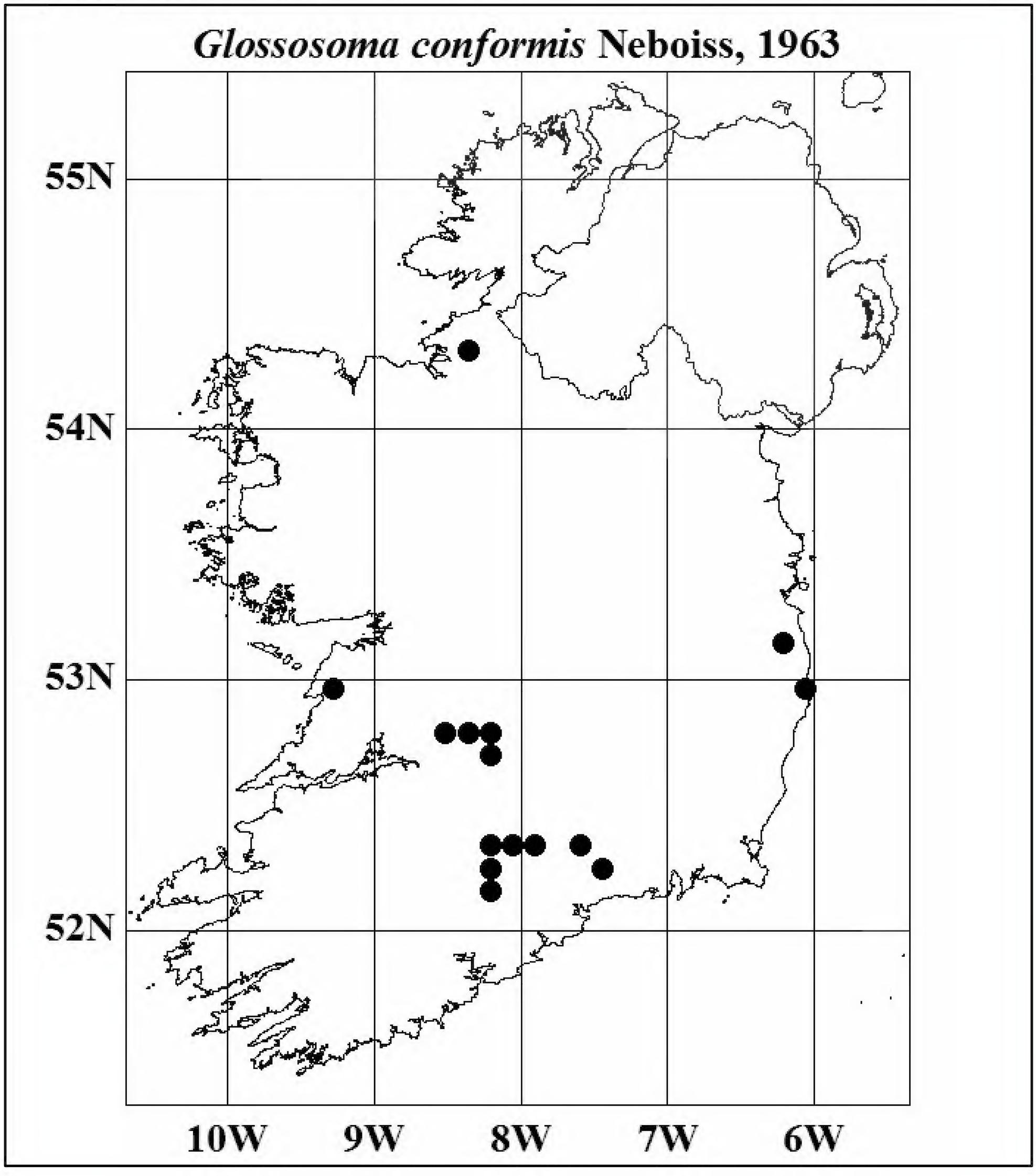


FIGURE 362. Known Irish distribution of *Agraylea multipunctata* Curtis, 1834.

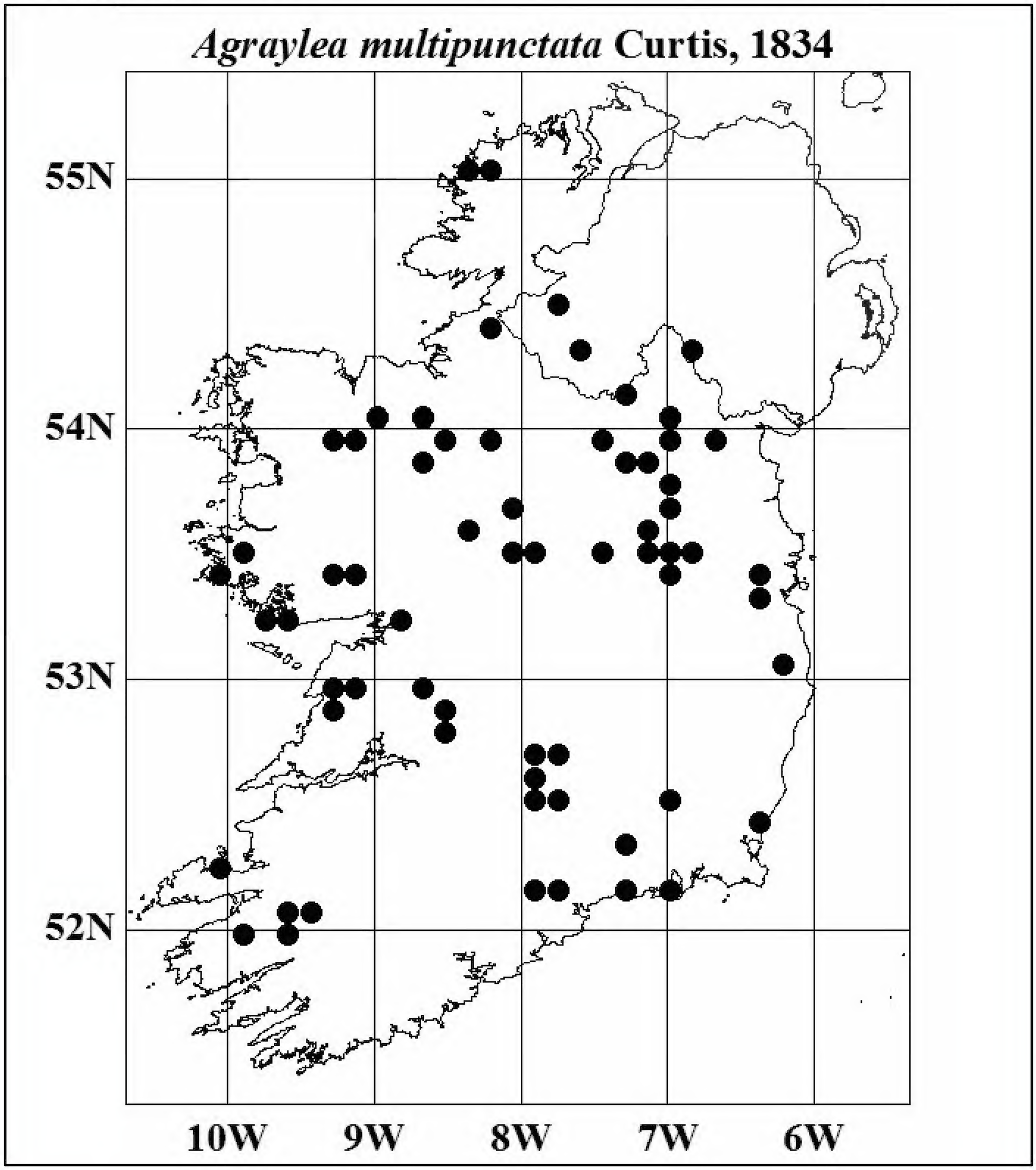


FIGURE 363. Known Irish distribution of *Agraylea sexmaculata* Curtis, 1834.

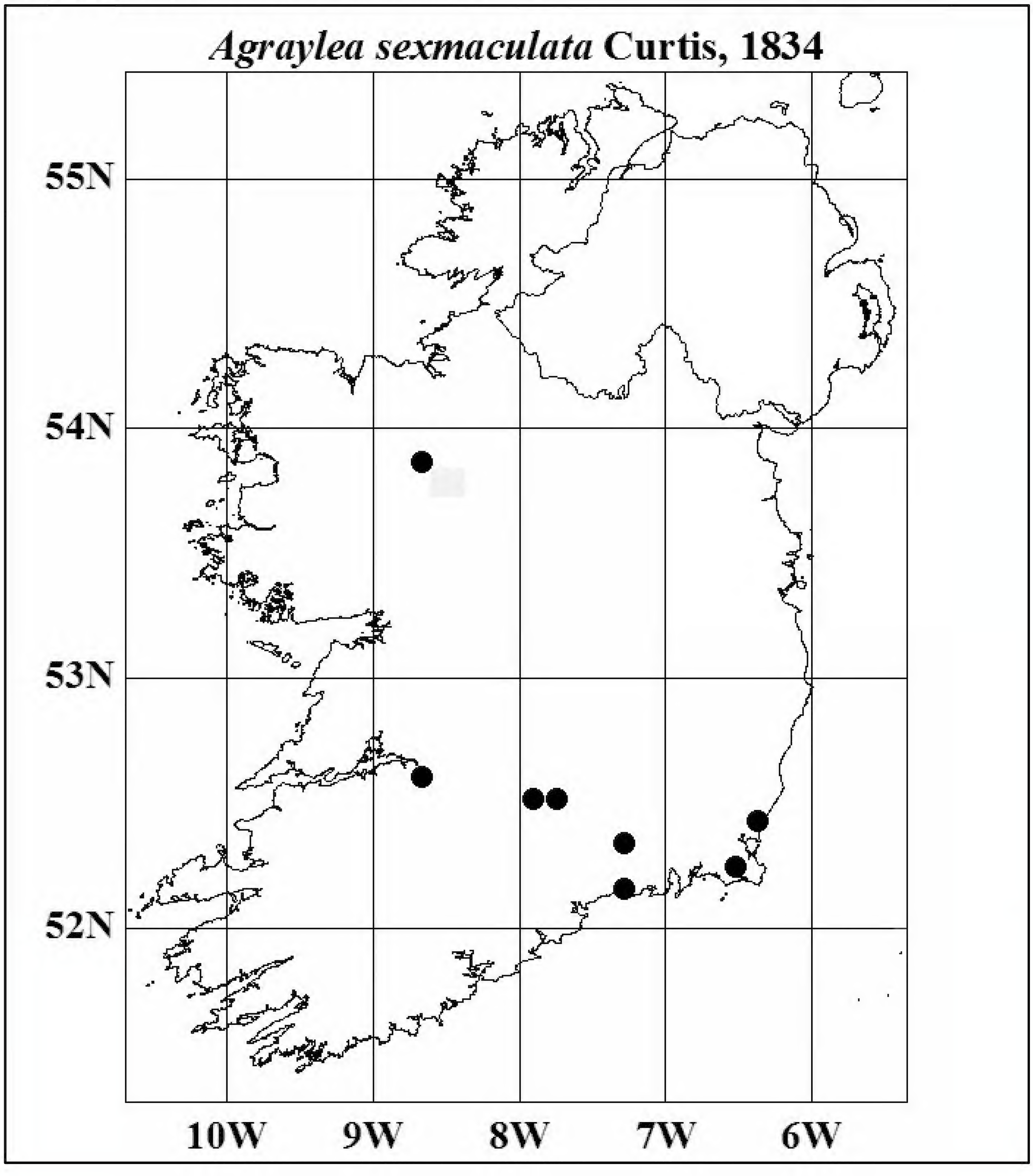


FIGURE 364. Known Irish distribution of *Allotrichia pallicornis* (Eaton, 1873).

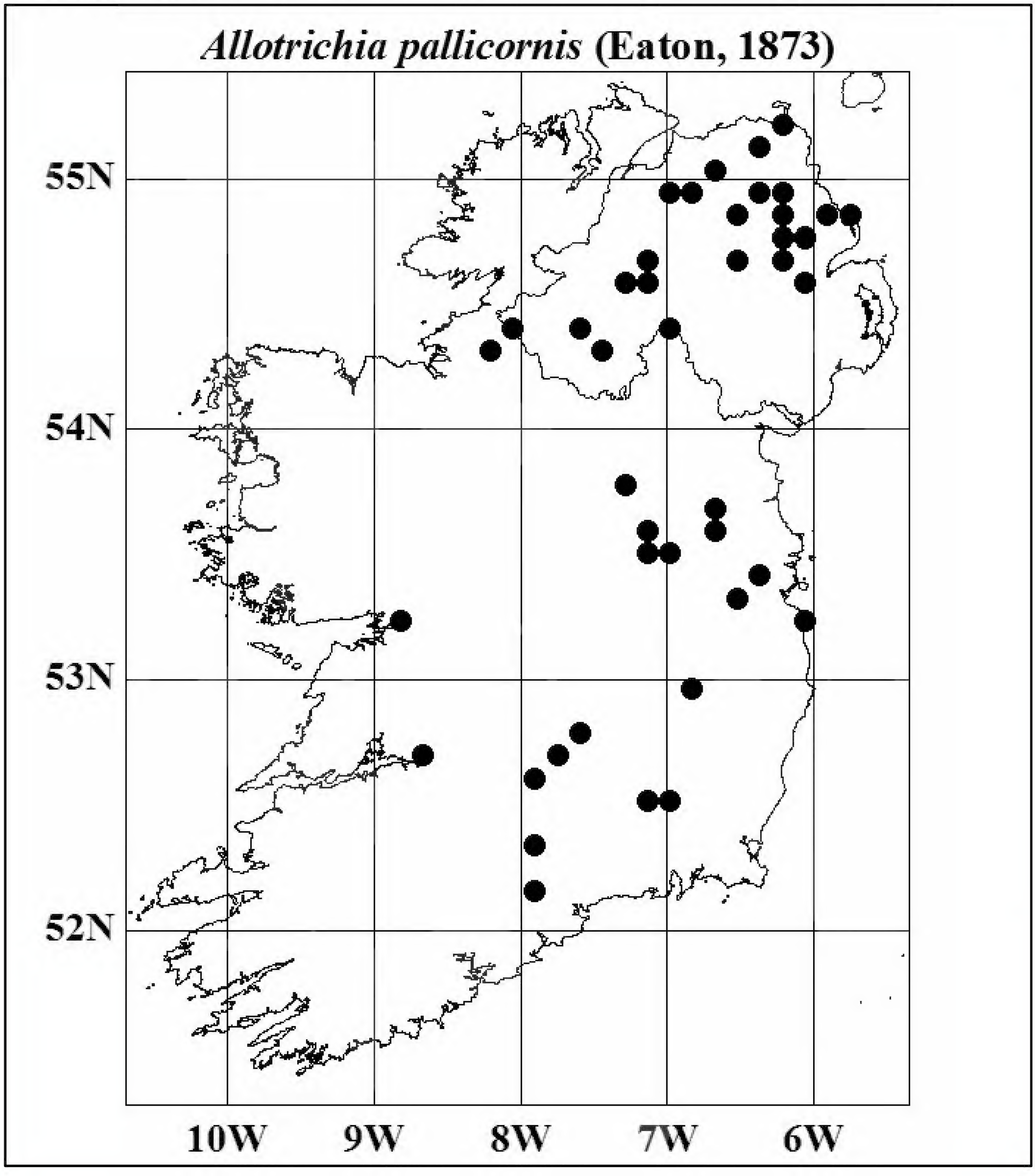


FIGURE 365. Known Irish distribution of *Hydroptila angulata* Mosely, 1922.

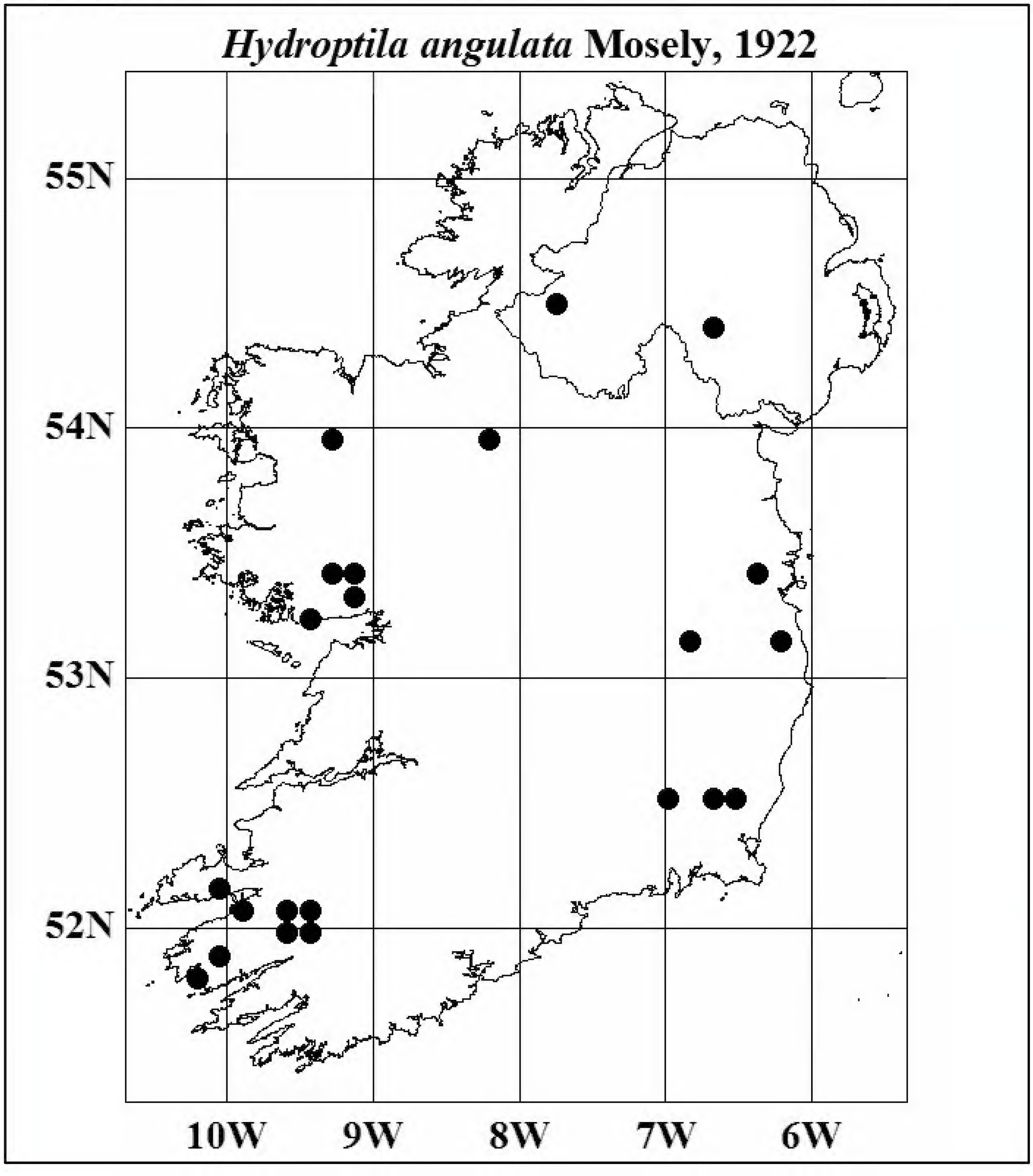


FIGURE 366. Known Irish distribution of *Hydroptila cornuta* Mosley, 1922.

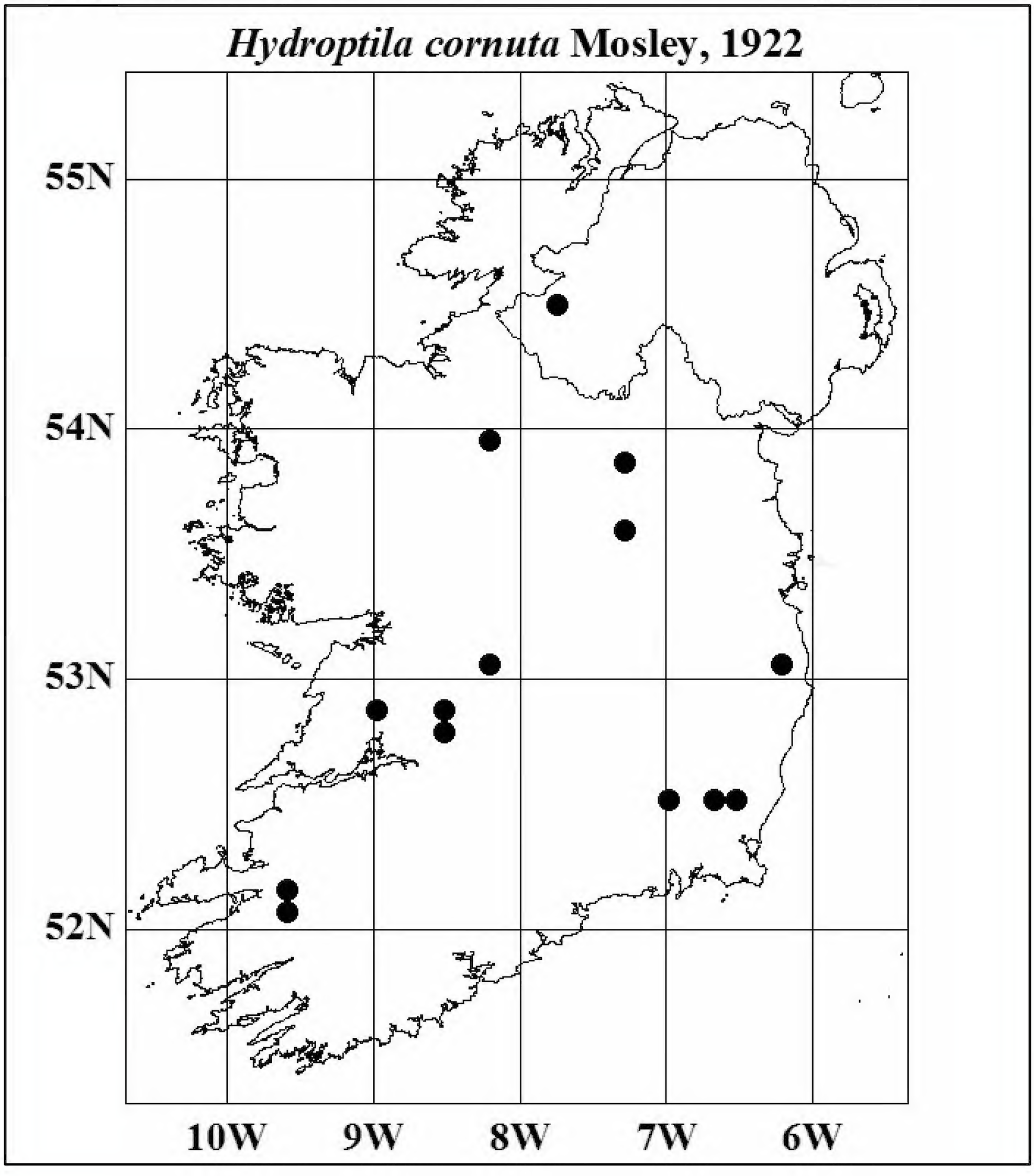


FIGURE 367. Known Irish distribution of *Hydroptila forcipata* (Eaton, 1873).

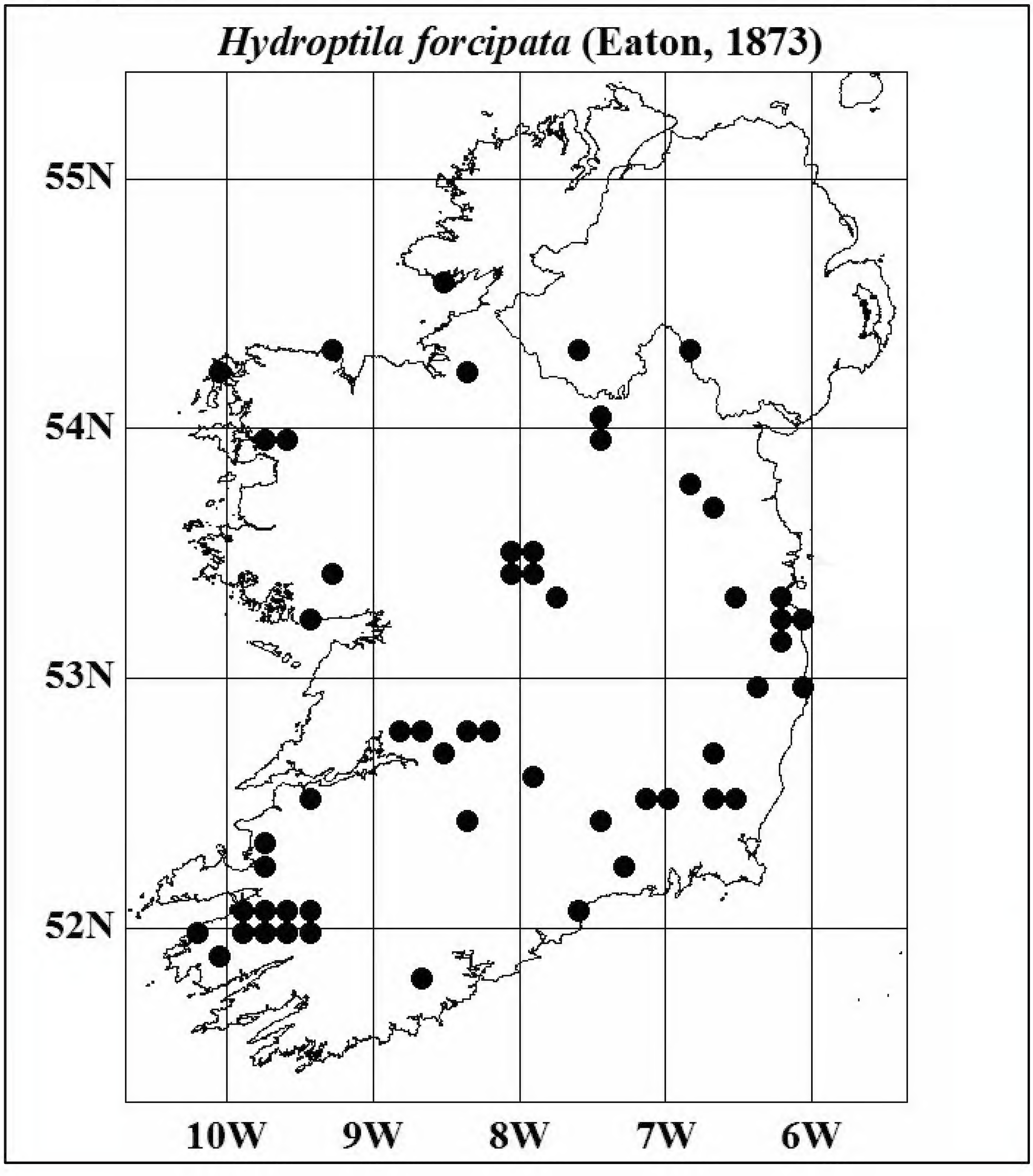


FIGURE 368. Known Irish distribution of *Hydroptila martini* Marshall, 1977.

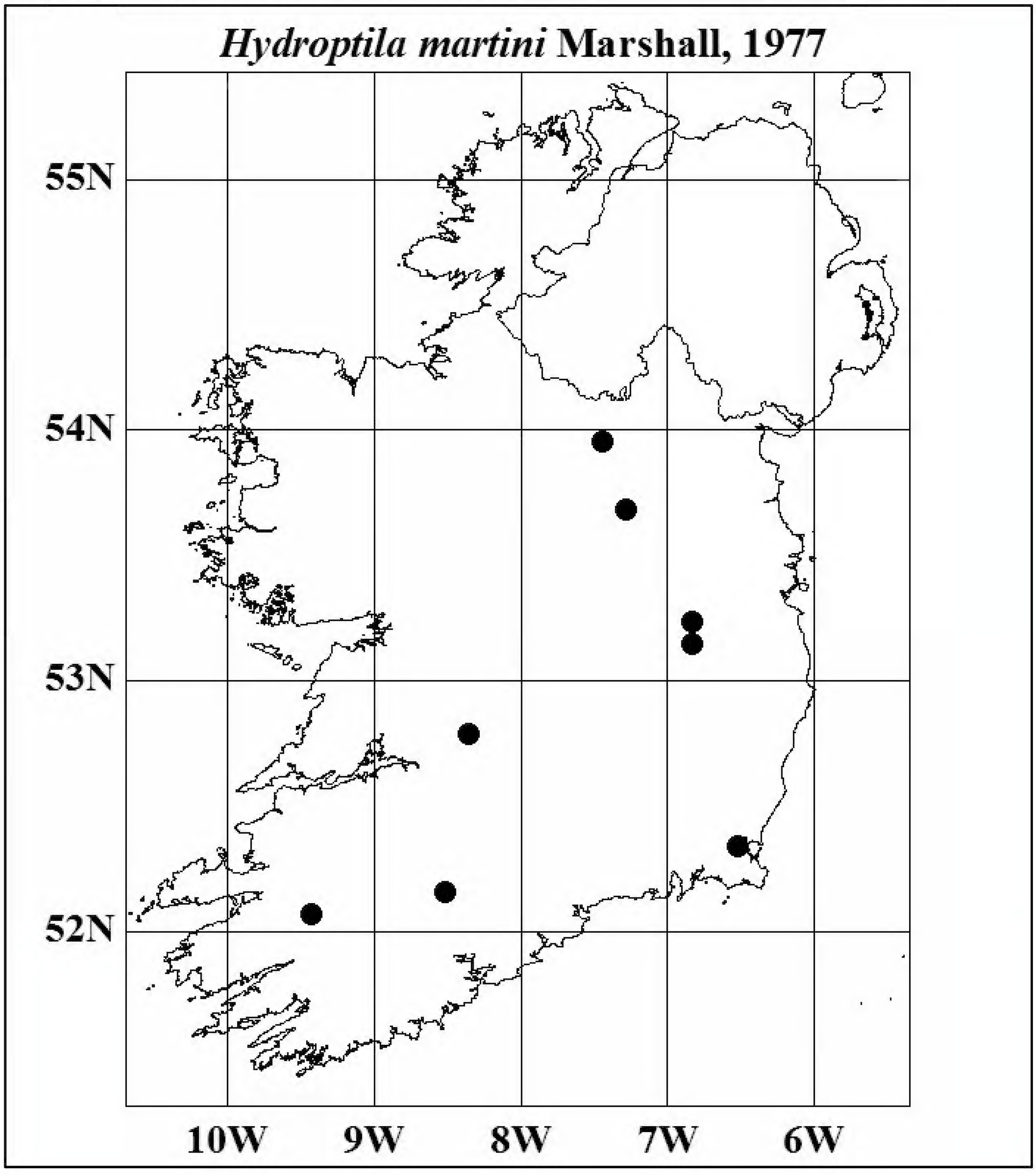


FIGURE 369. Known Irish distribution of *Hydroptila occulta* (Eaton, 1873).

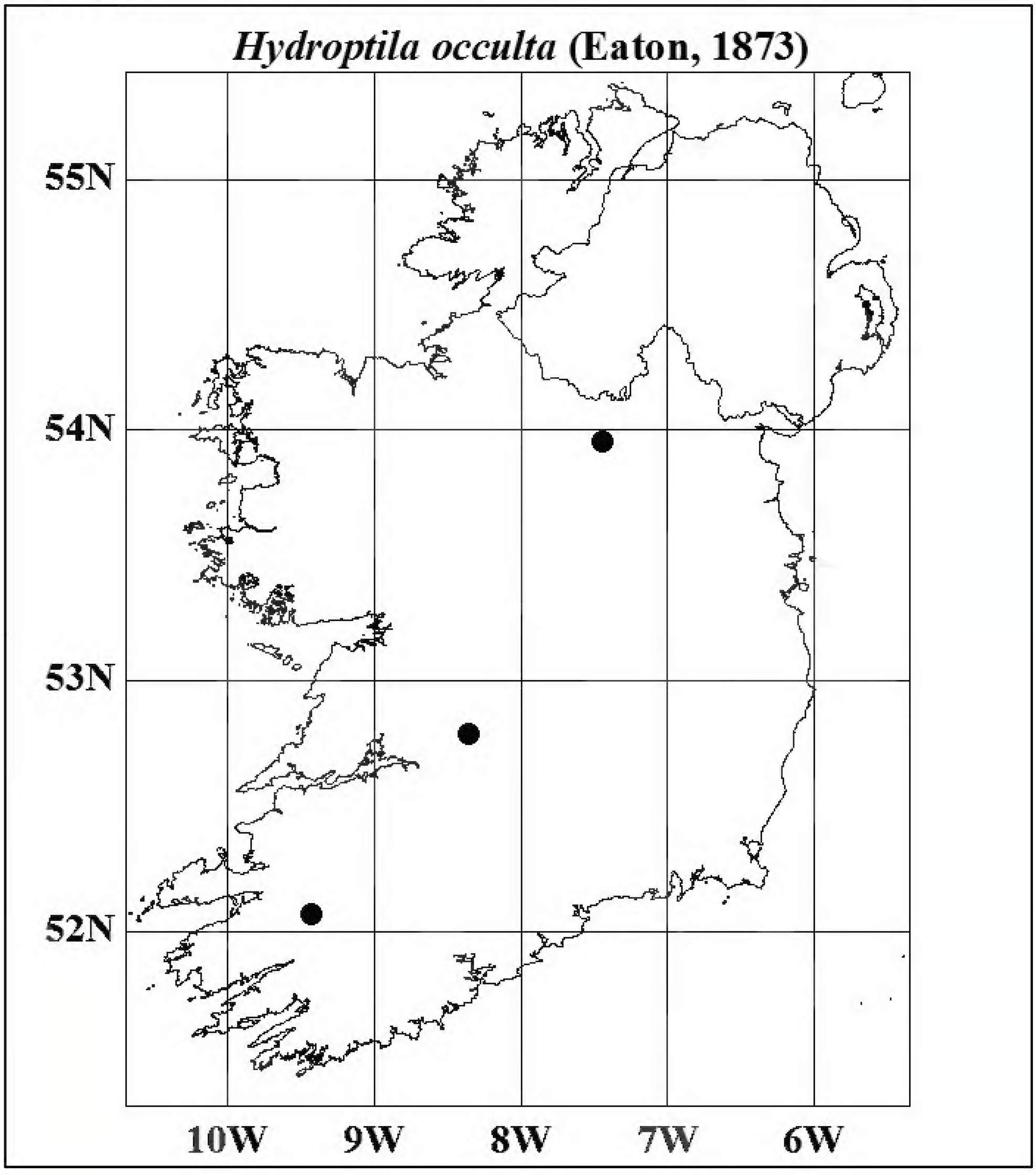


FIGURE 370. Known Irish distribution of *Hydroptila pulchricornis* Pictet, 1834.

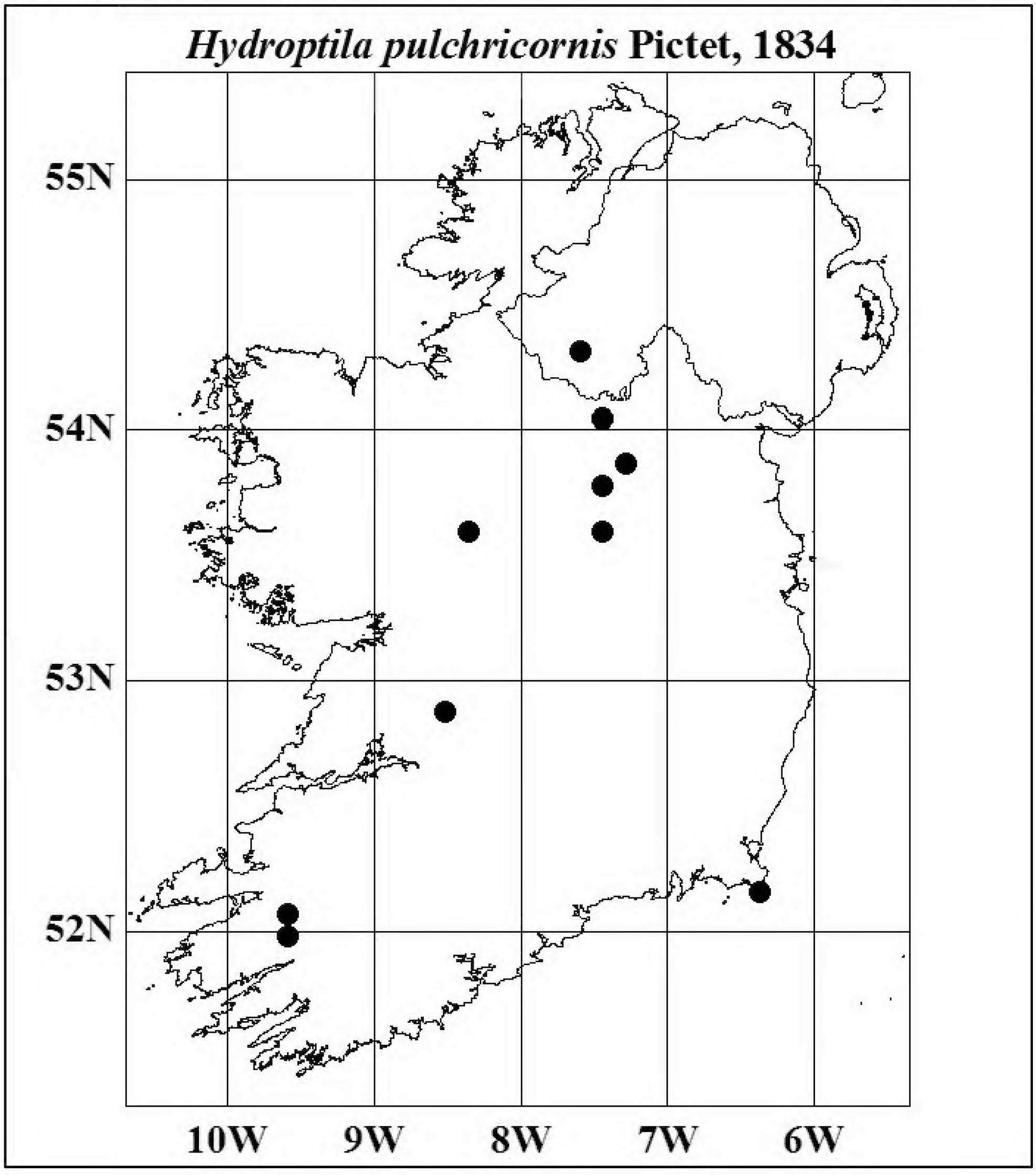


FIGURE 371. Known Irish distribution of *Hydroptila simulans* Mosely, 1920.

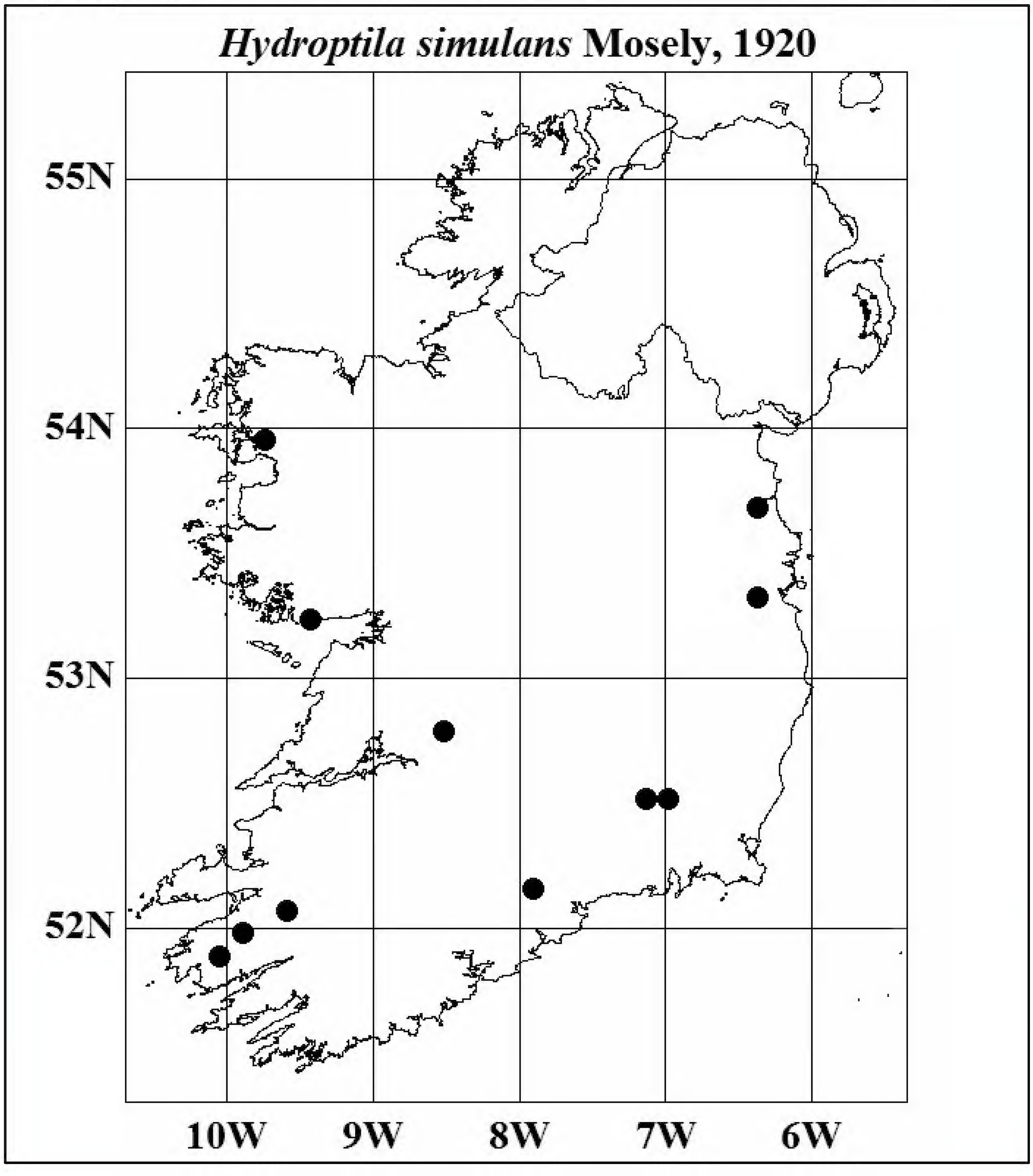


FIGURE 372. Known Irish distribution of *Hydroptila sparsa* Curtis, 1834.

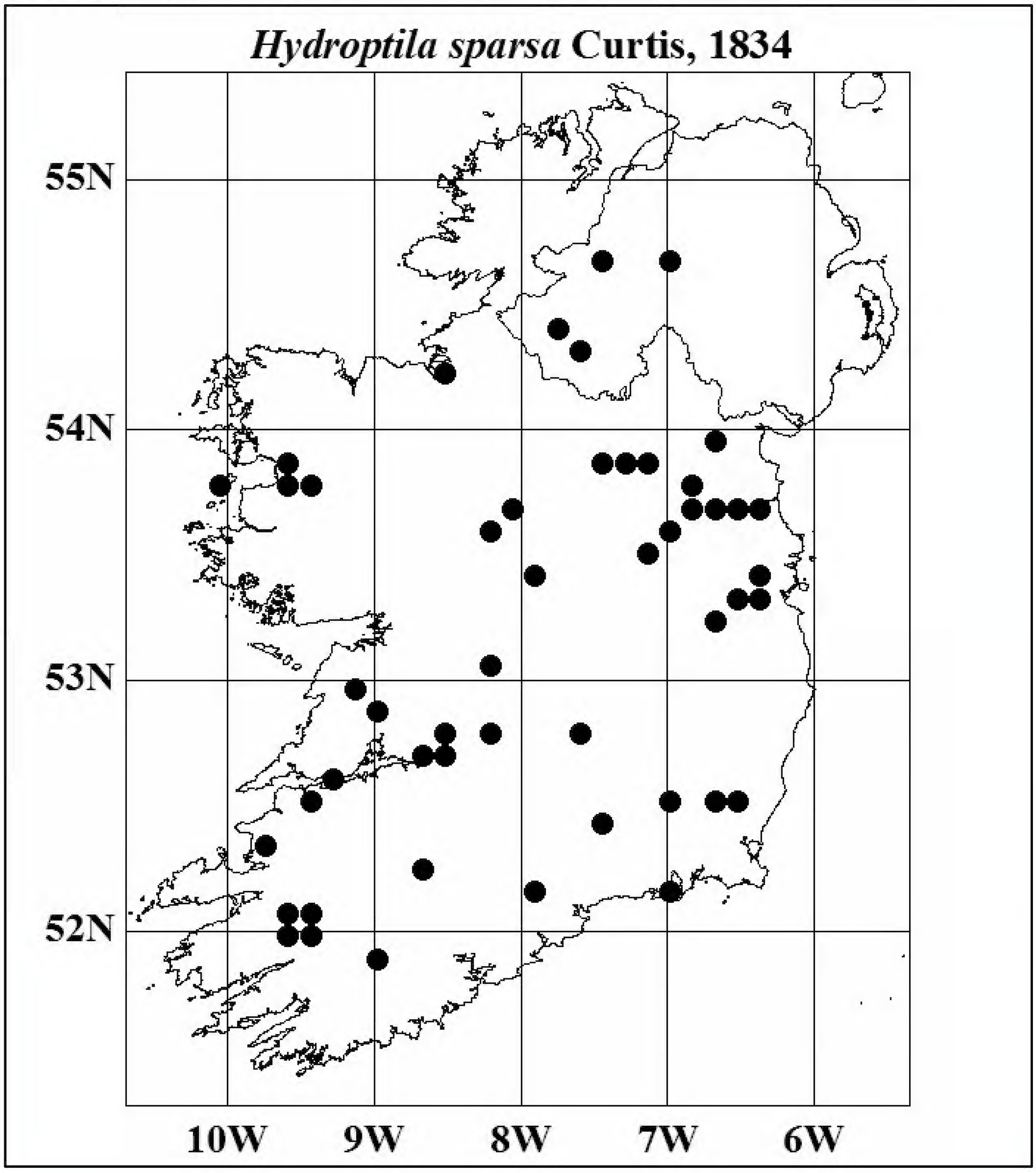


FIGURE 373. Known Irish distribution of *Hydroptila tigurina* Ris, 1894.

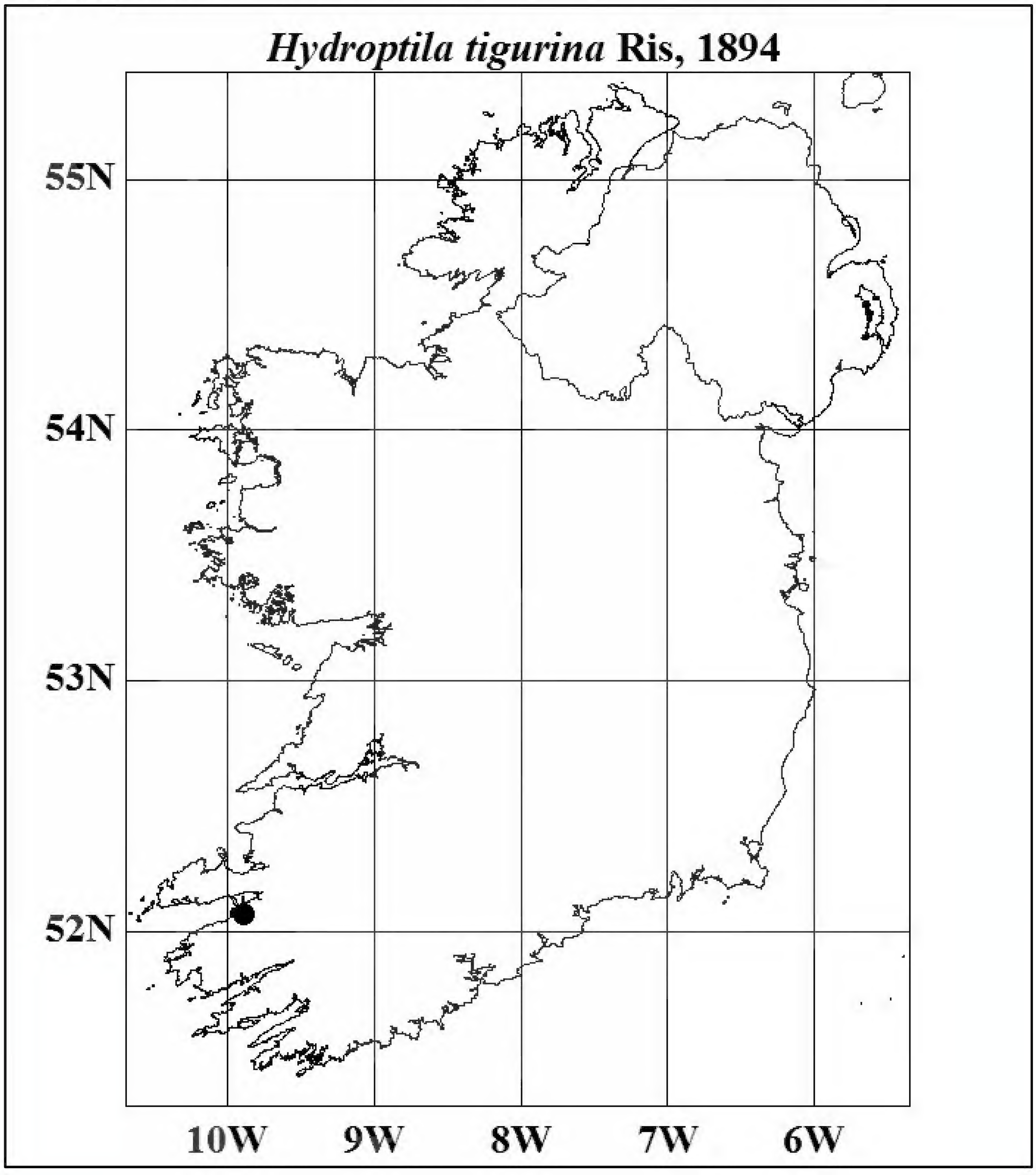


FIGURE 374. Known Irish distribution of *Hydroptila tineoides* Dalman, 1819.

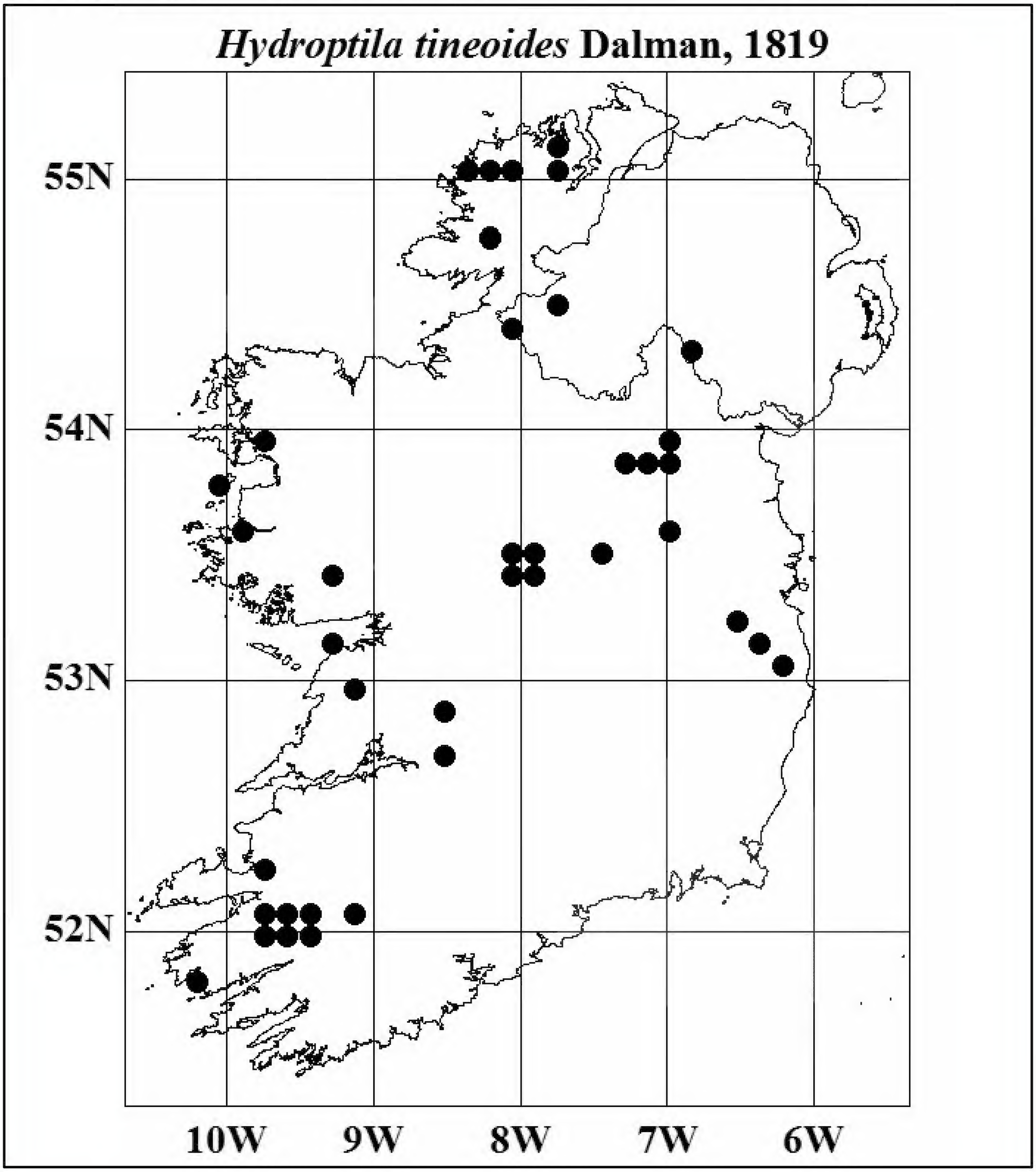


FIGURE 375. Known Irish distribution of *Hydroptila valesiaca* Schmid, 1947.

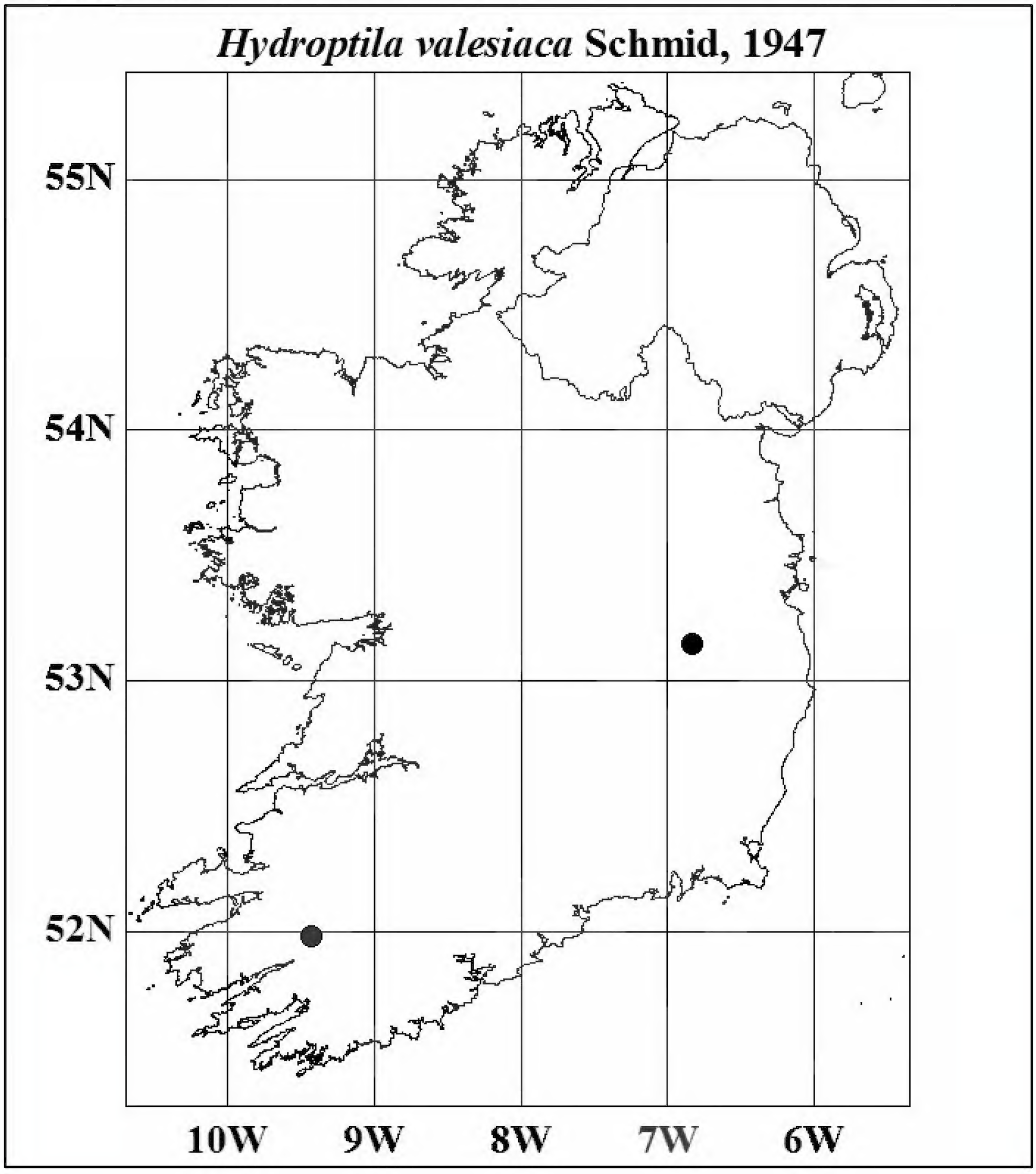


FIGURE 376. Known Irish distribution of *Ithytrichia clavata* Morton, 1905.

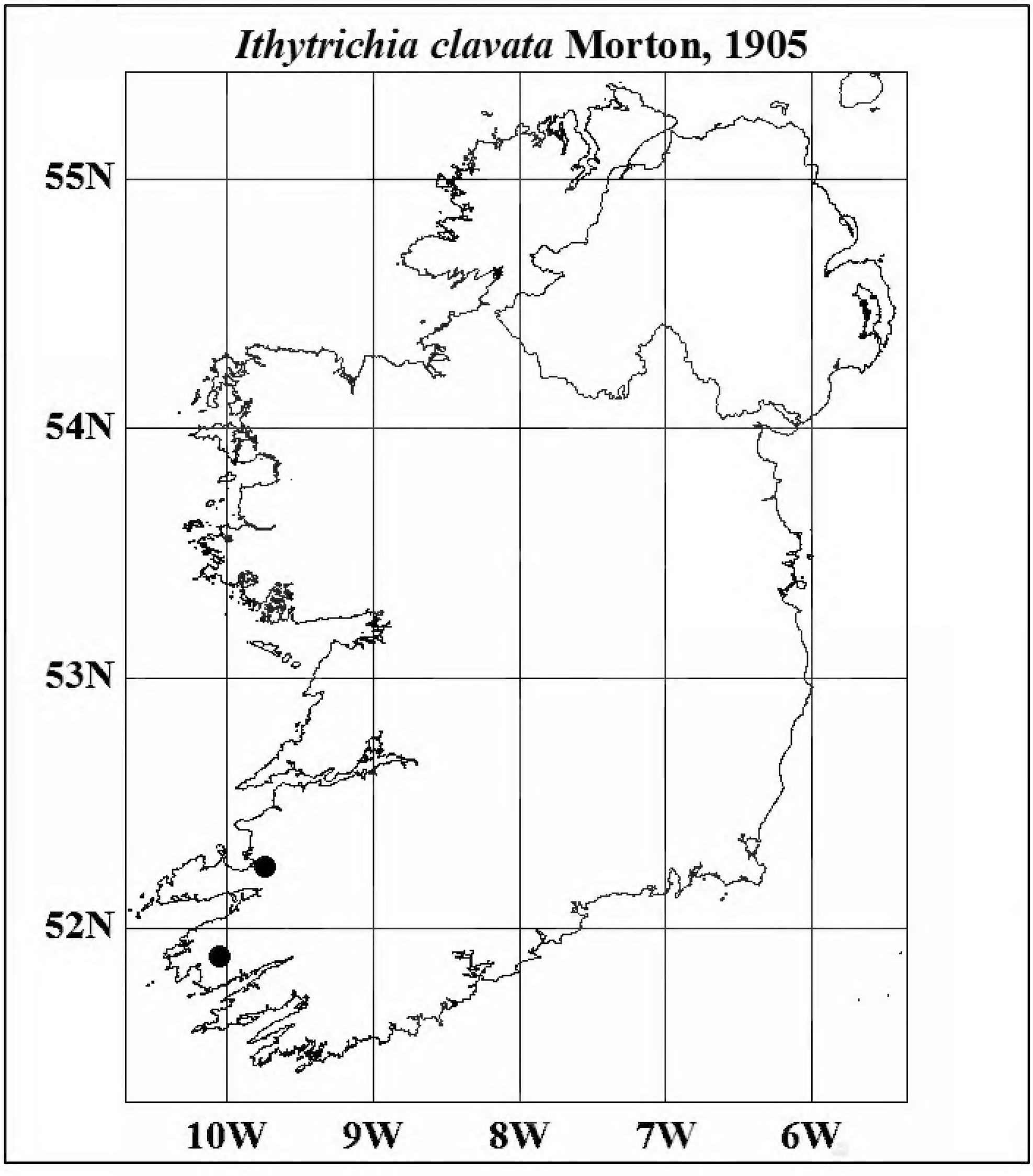


FIGURE 377. Known Irish distribution of *Ithytrichia lamellaris* Eaton, 1873.

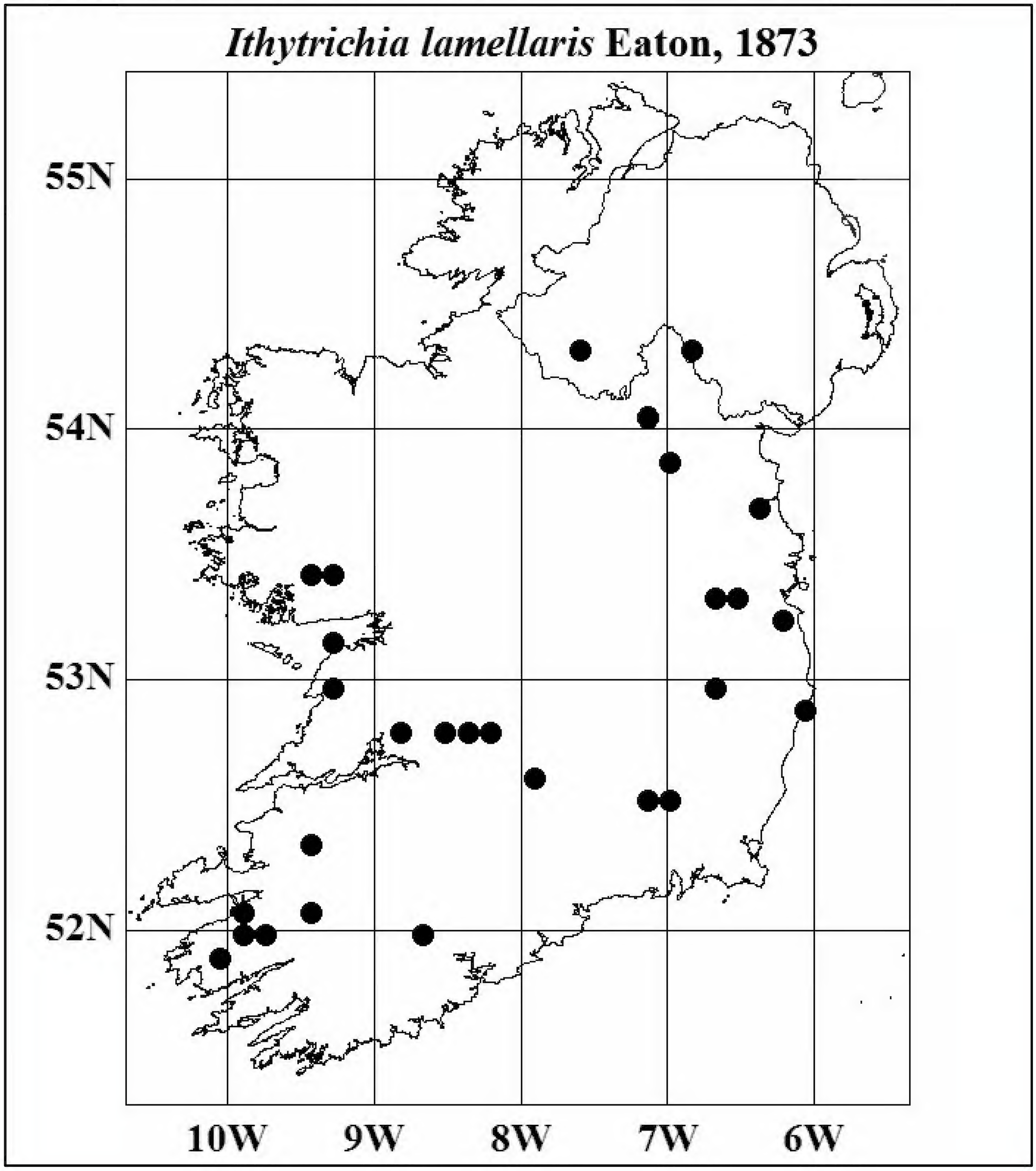


FIGURE 378. Known Irish distribution of *Orthotrichia angustella* (McLachlan, 1865).

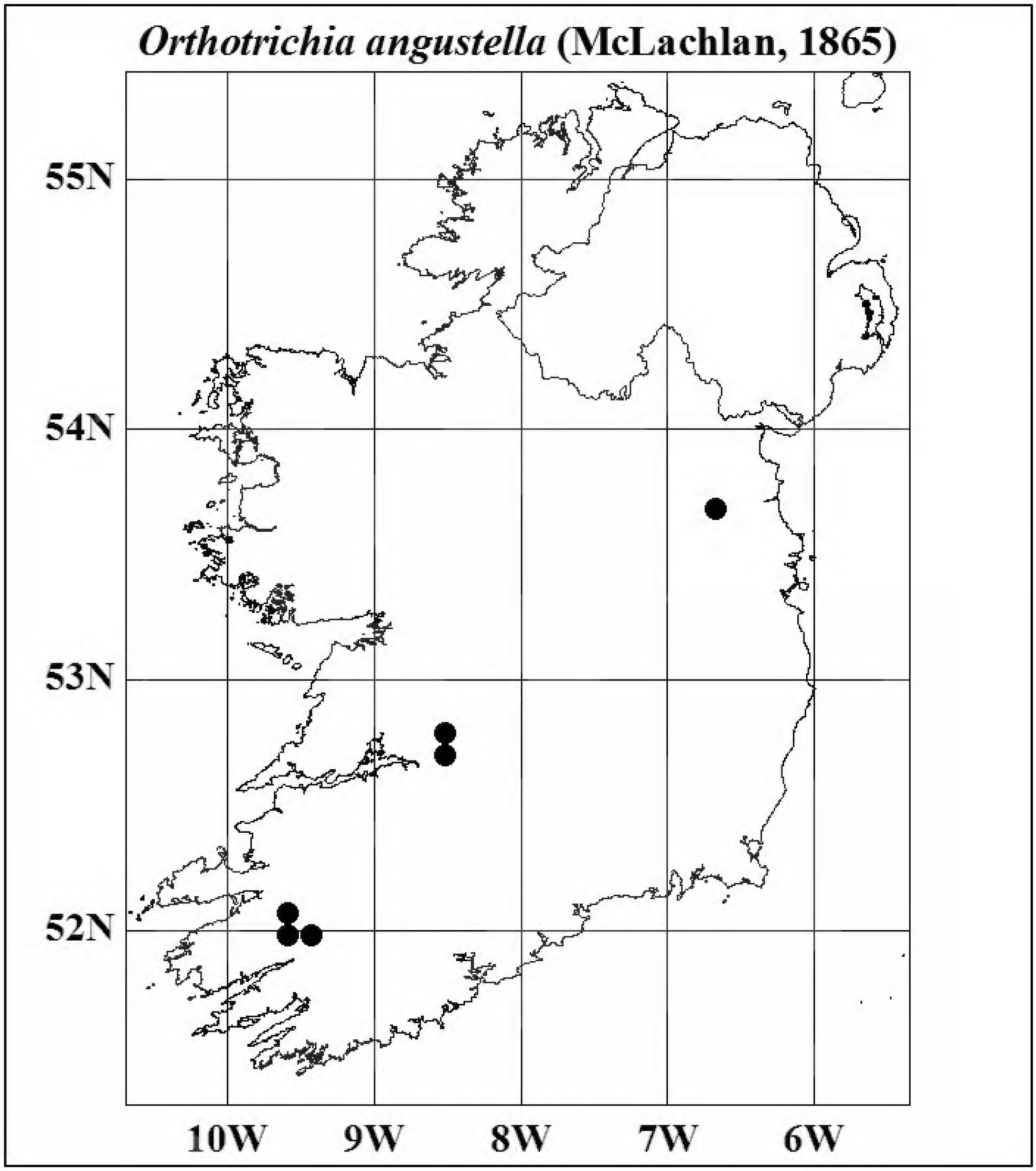


FIGURE 379. Known Irish distribution of *Orthotrichia costalis* (Curtis, 1834).

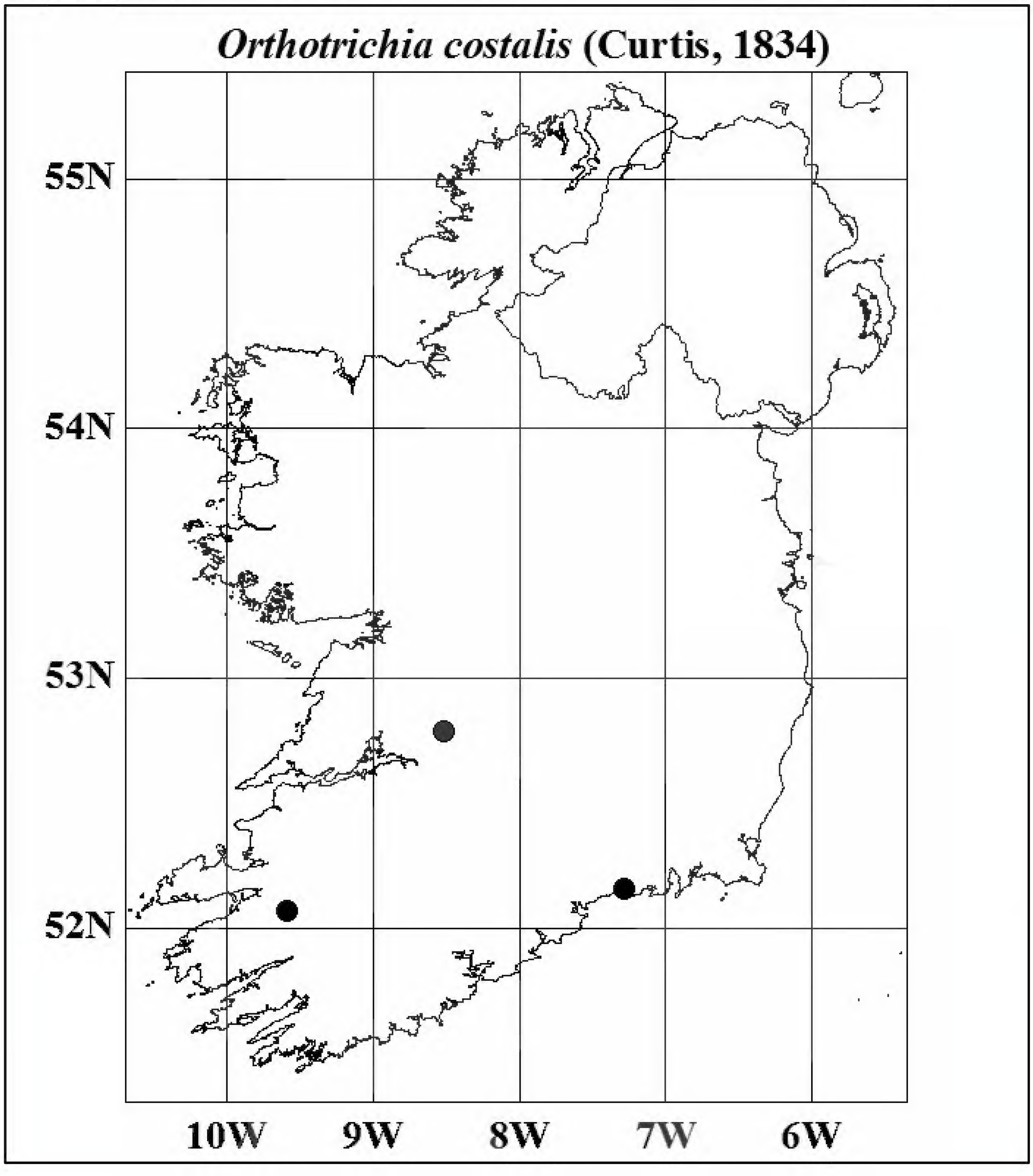


FIGURE 380. Known Irish distribution of *Oxyethira falcata* Morton, 1893.

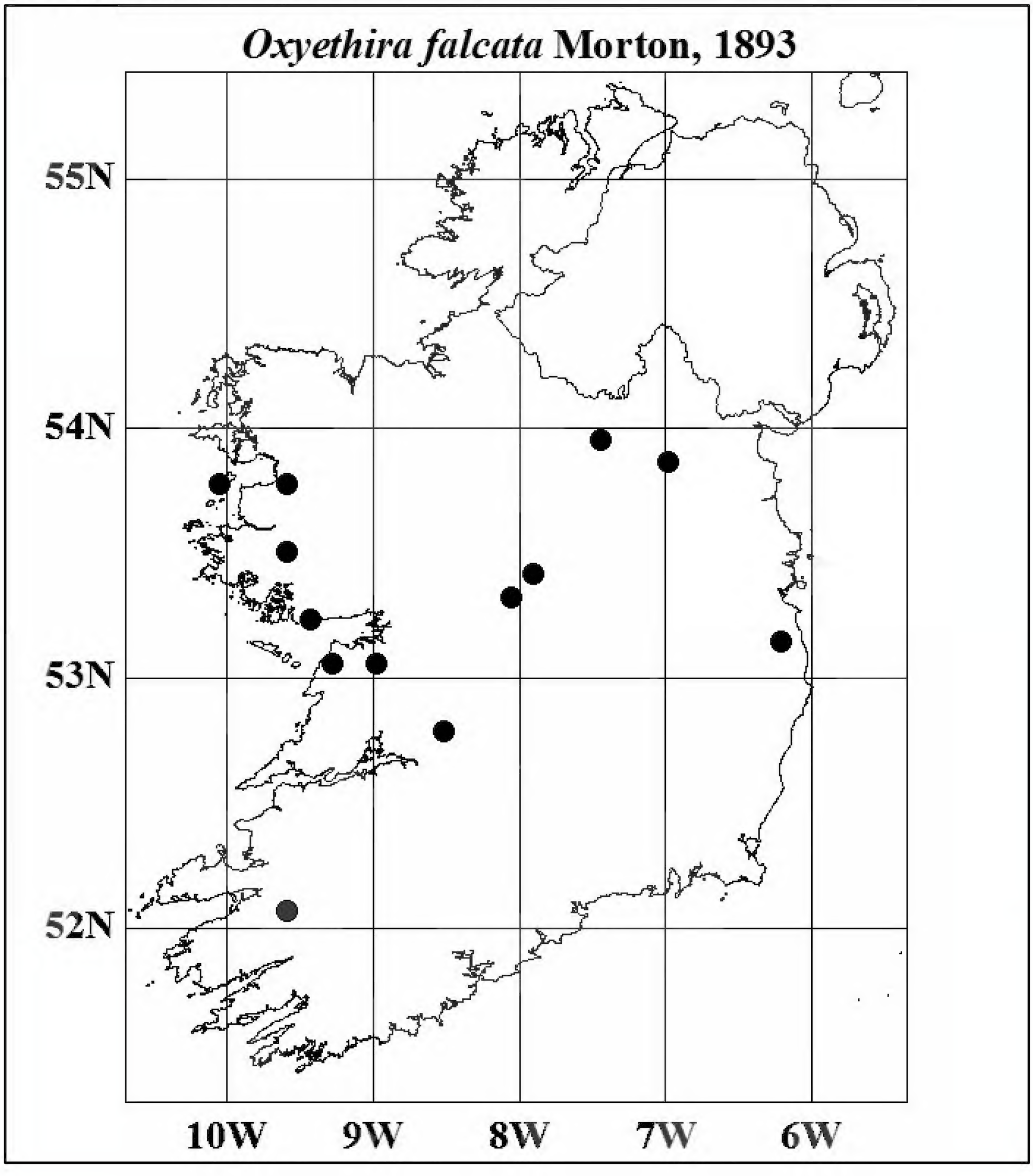


FIGURE 381. Known Irish distribution of *Oxyethira flavicornis* (Pictet, 1834).

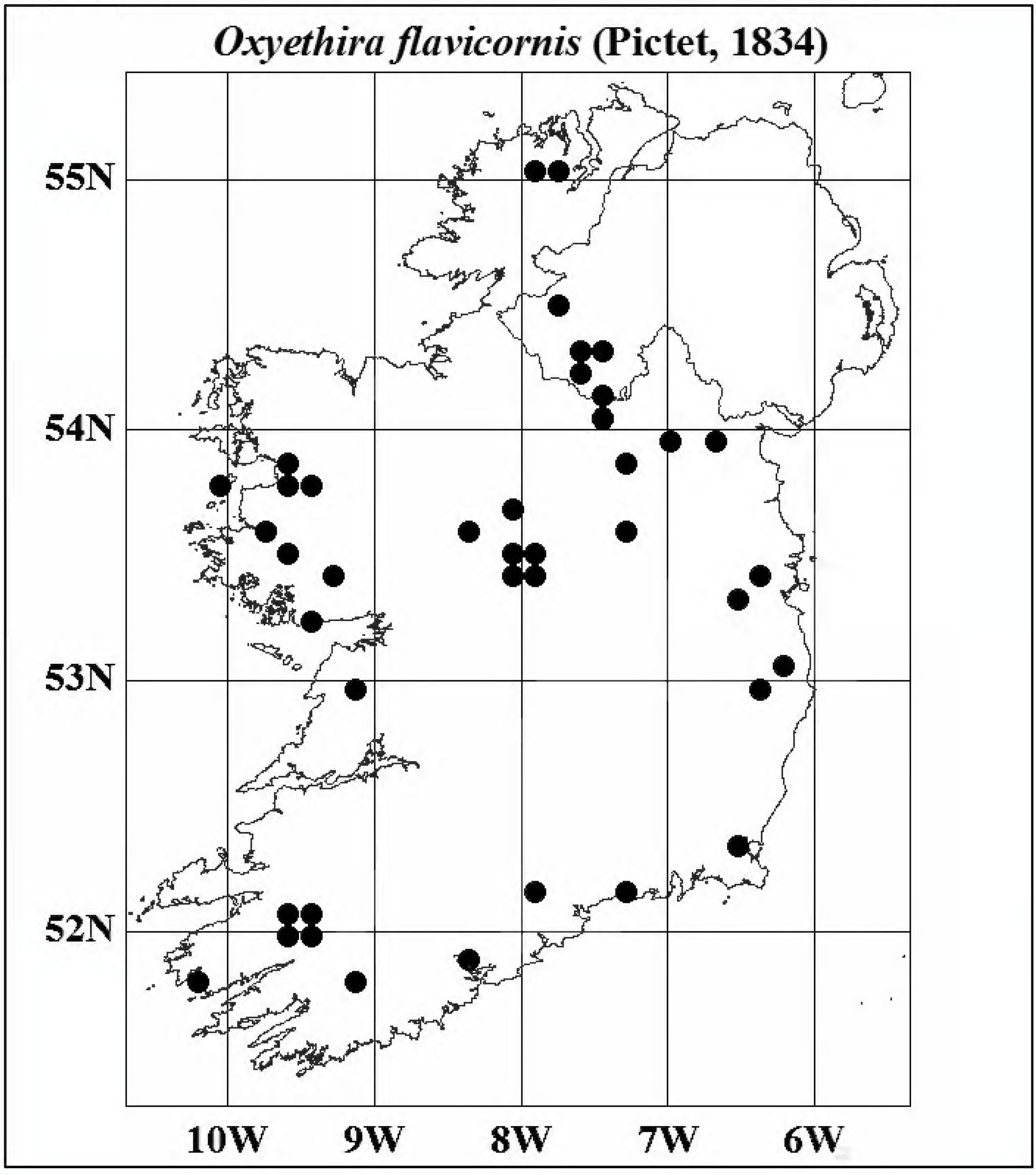


FIGURE 382. Known Irish distribution of *Oxyethira frici* Klapálek, 1891.

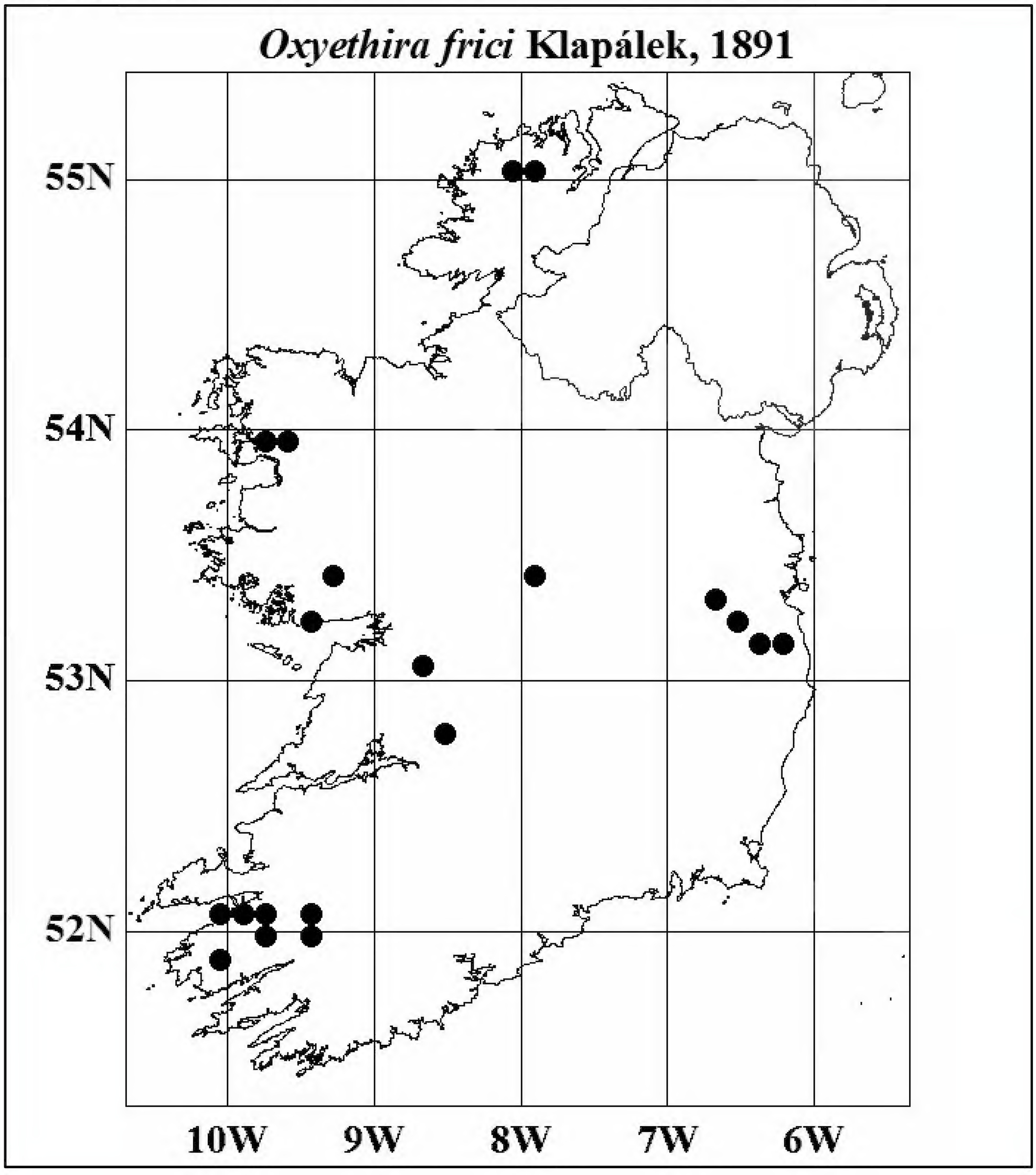


FIGURE 383. Known Irish distribution of *Oxyethira sagittifera* Ris, 1897.

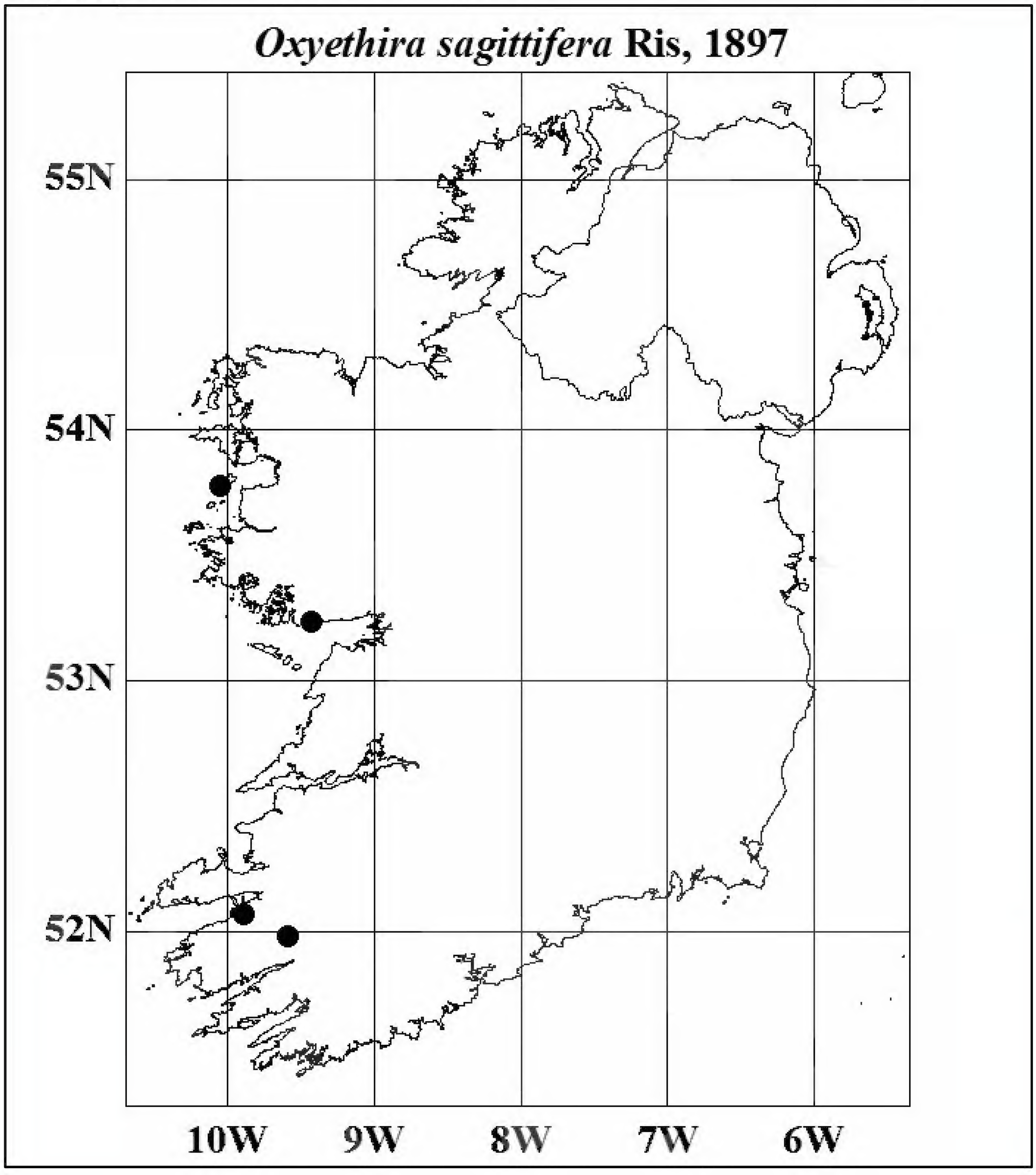


FIGURE 384. Known Irish distribution of *Oxyethira simplex* Ris, 1897.

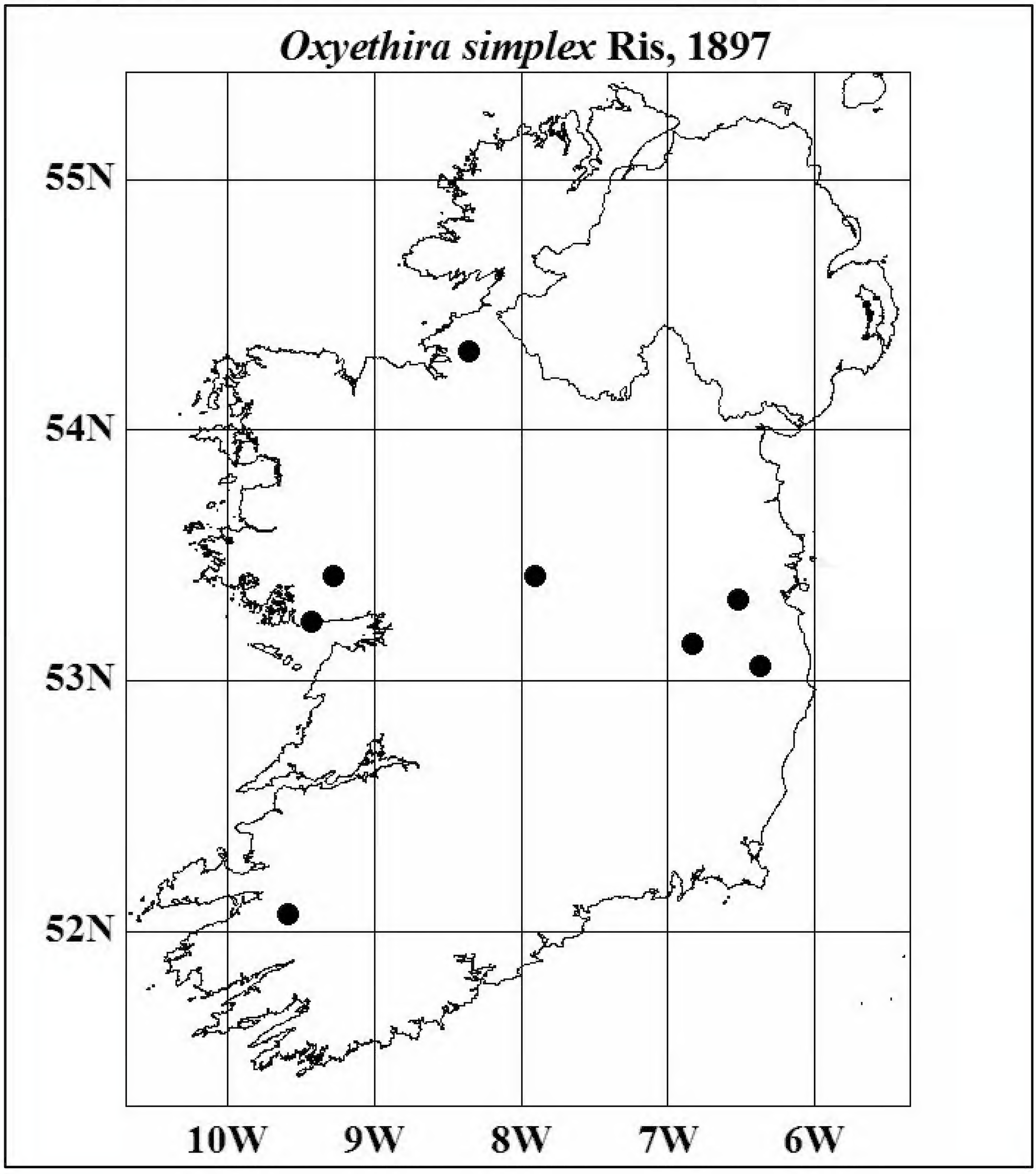


FIGURE 385. Known Irish distribution of *Oxyethira tristella* Klapálek, 1895.

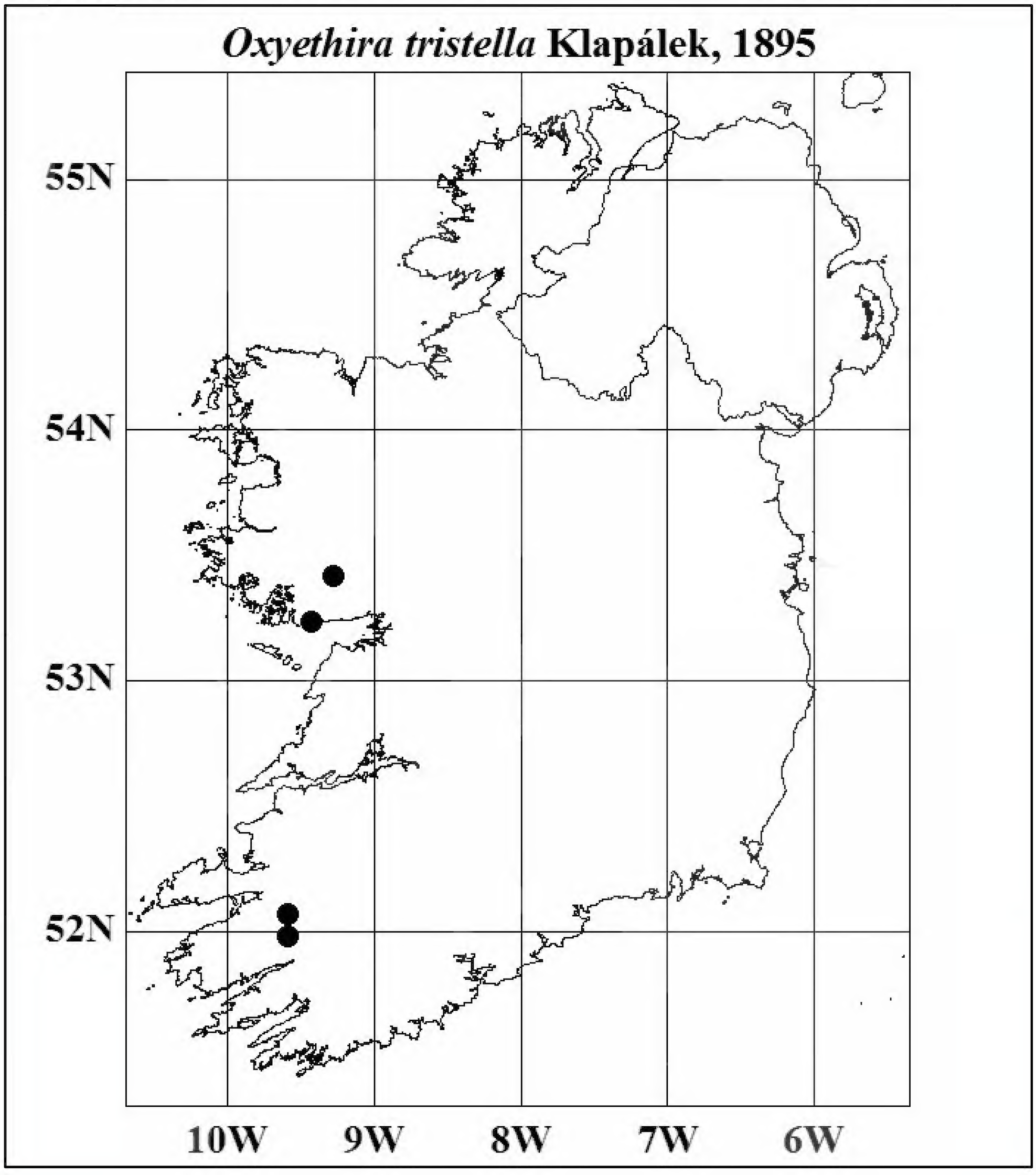


FIGURE 386. Known Irish distribution of *Tricholeiochiton fagesii* (Guinard, 1879).

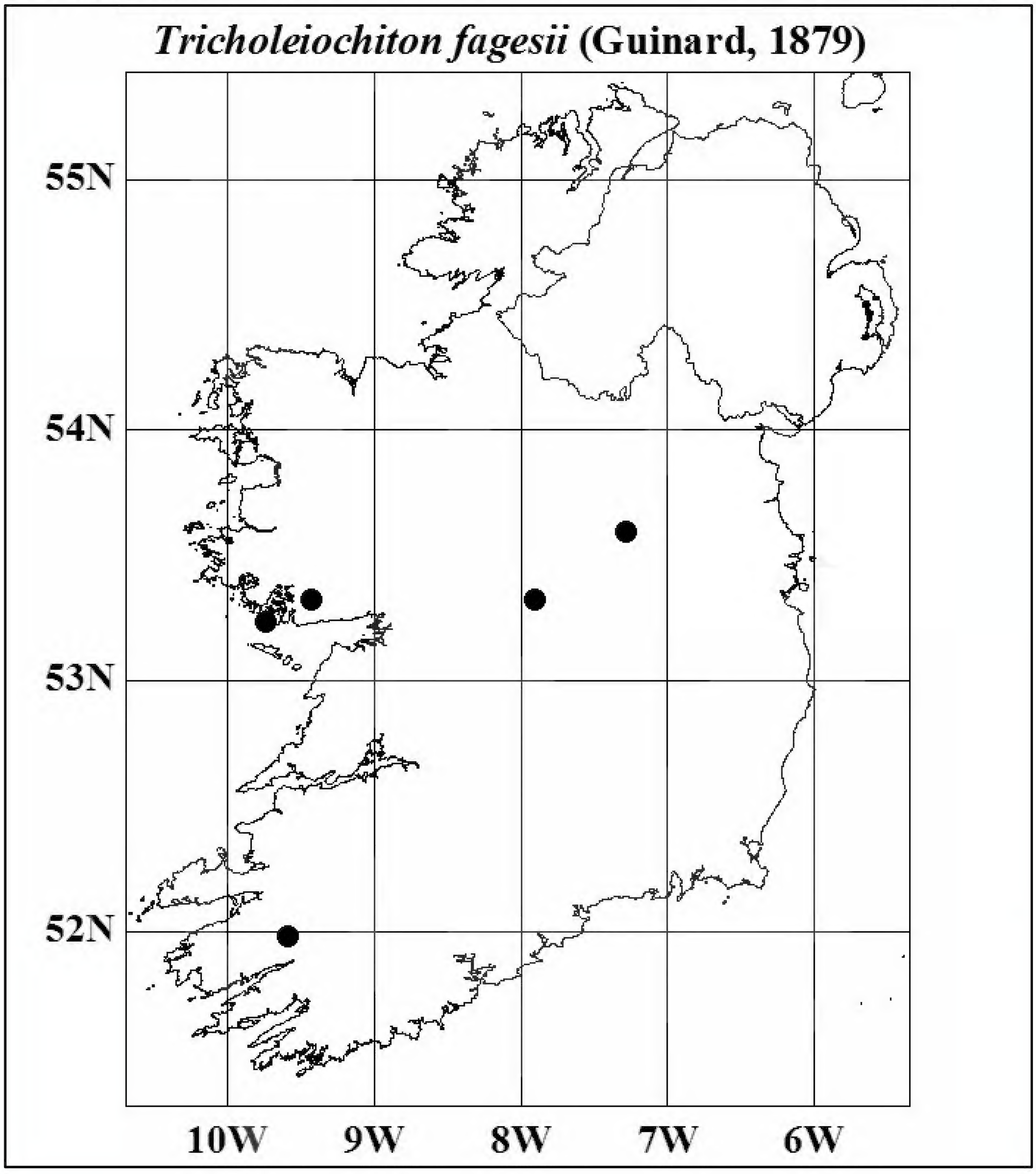


FIGURE 387. Known Irish distribution of *Chimarra marginata* (Linnaeus, 1761).

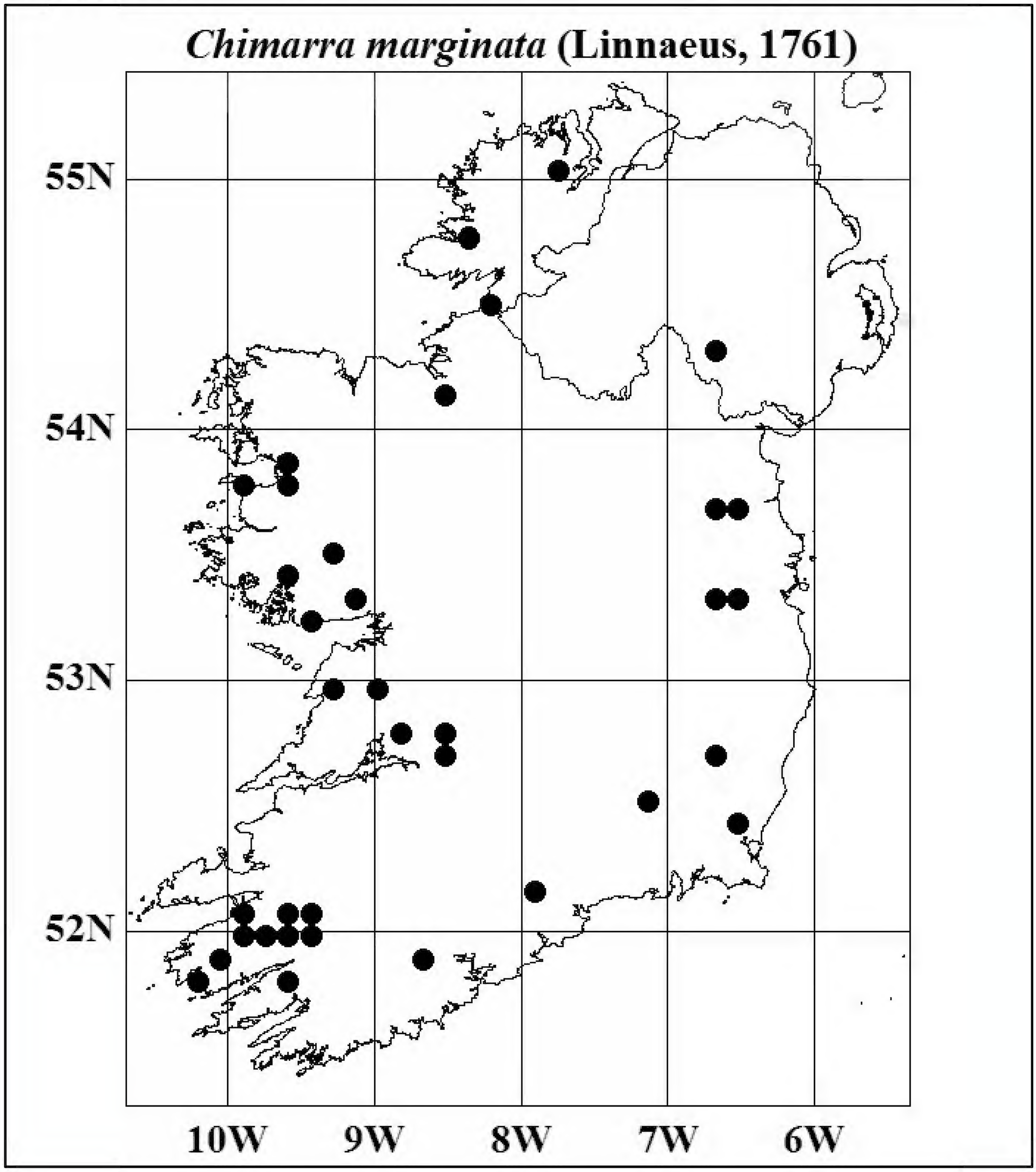


FIGURE 388. Known Irish distribution of *Philopotamus montanus* (Donovan, 1813).

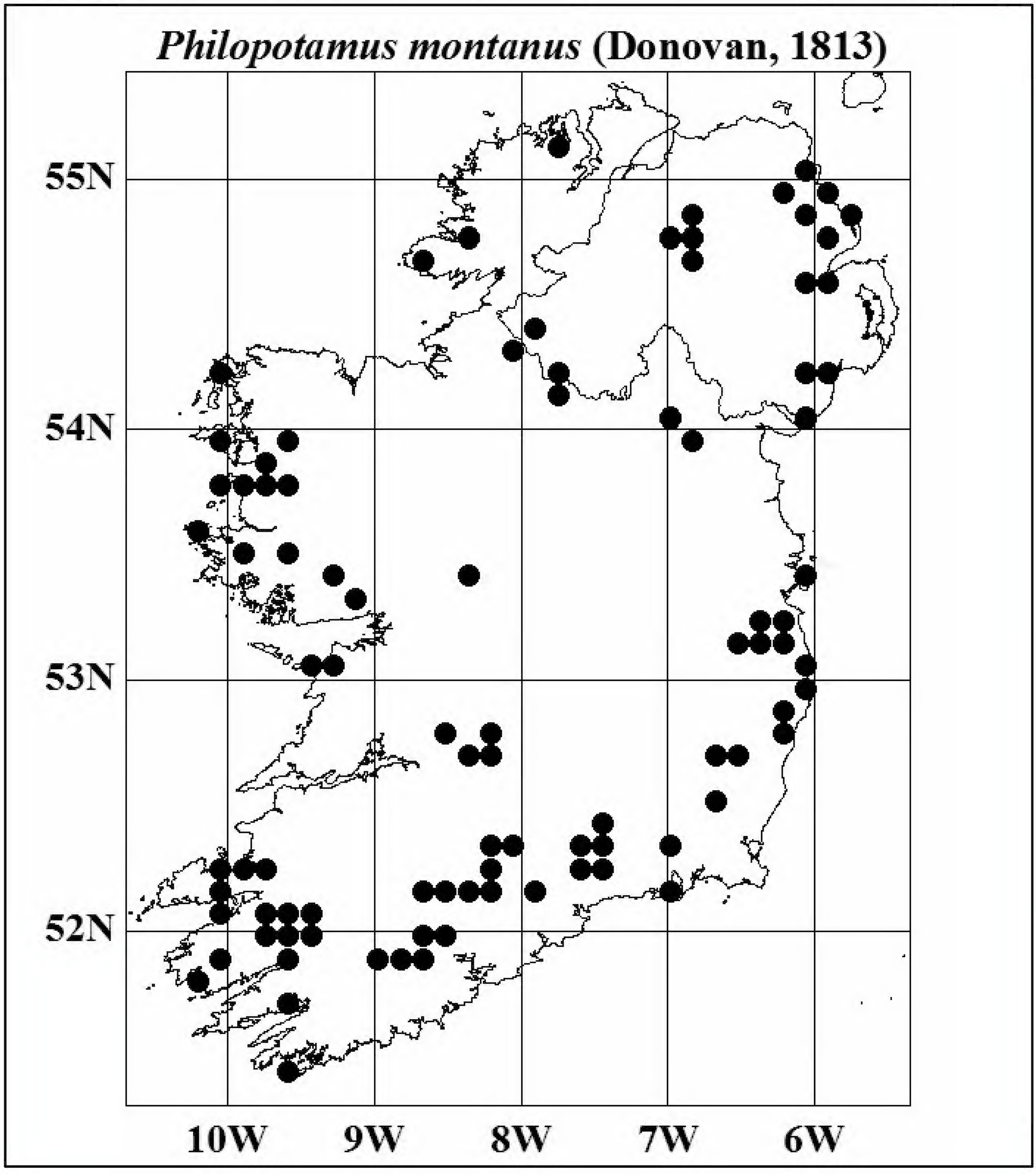


FIGURE 389. Known Irish distribution of *Wormaldia mediana* McLachlan, 1878.

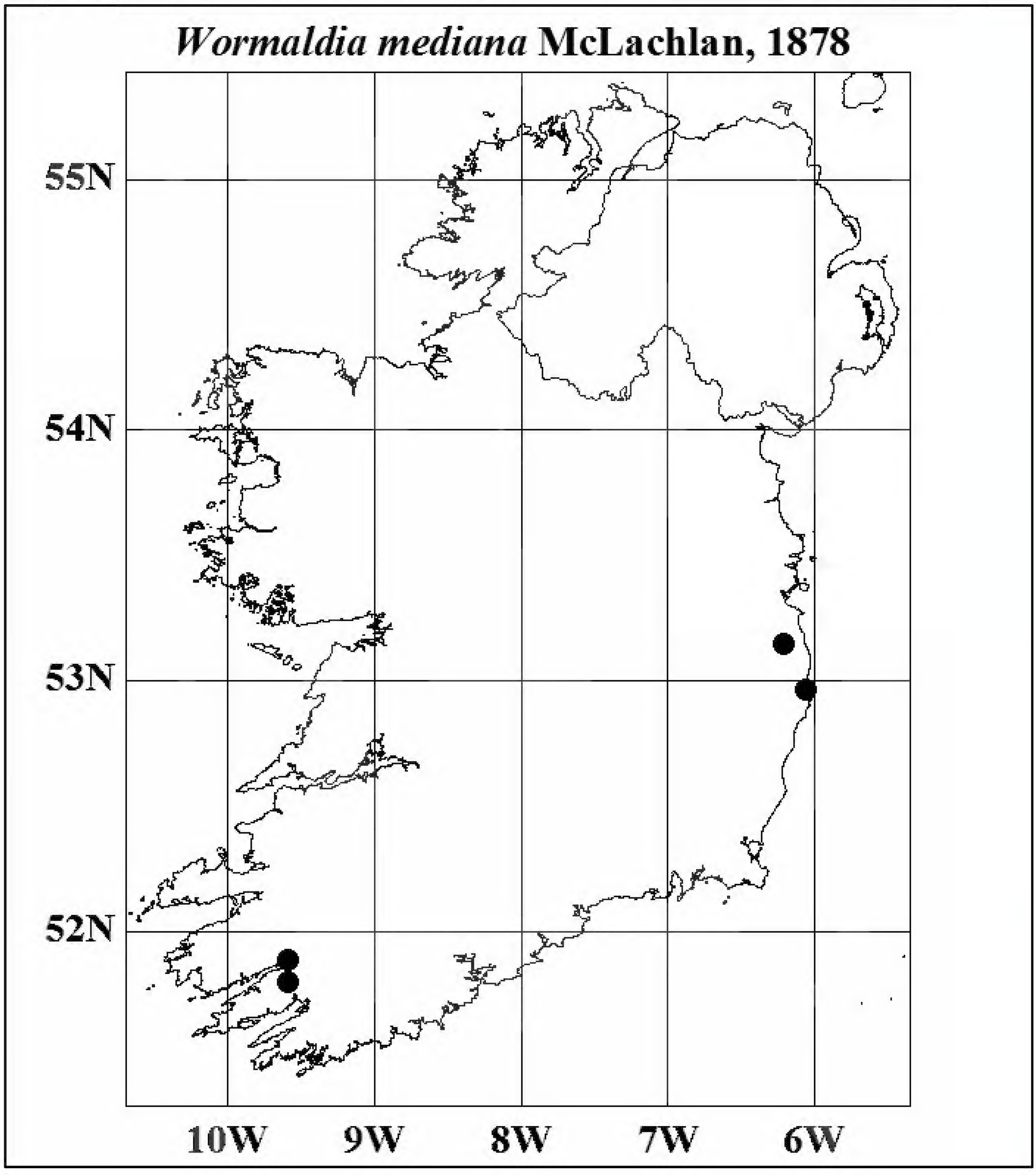


FIGURE 390. Known Irish distribution of *Wormaldia occipitalis* (Pictet, 1834).

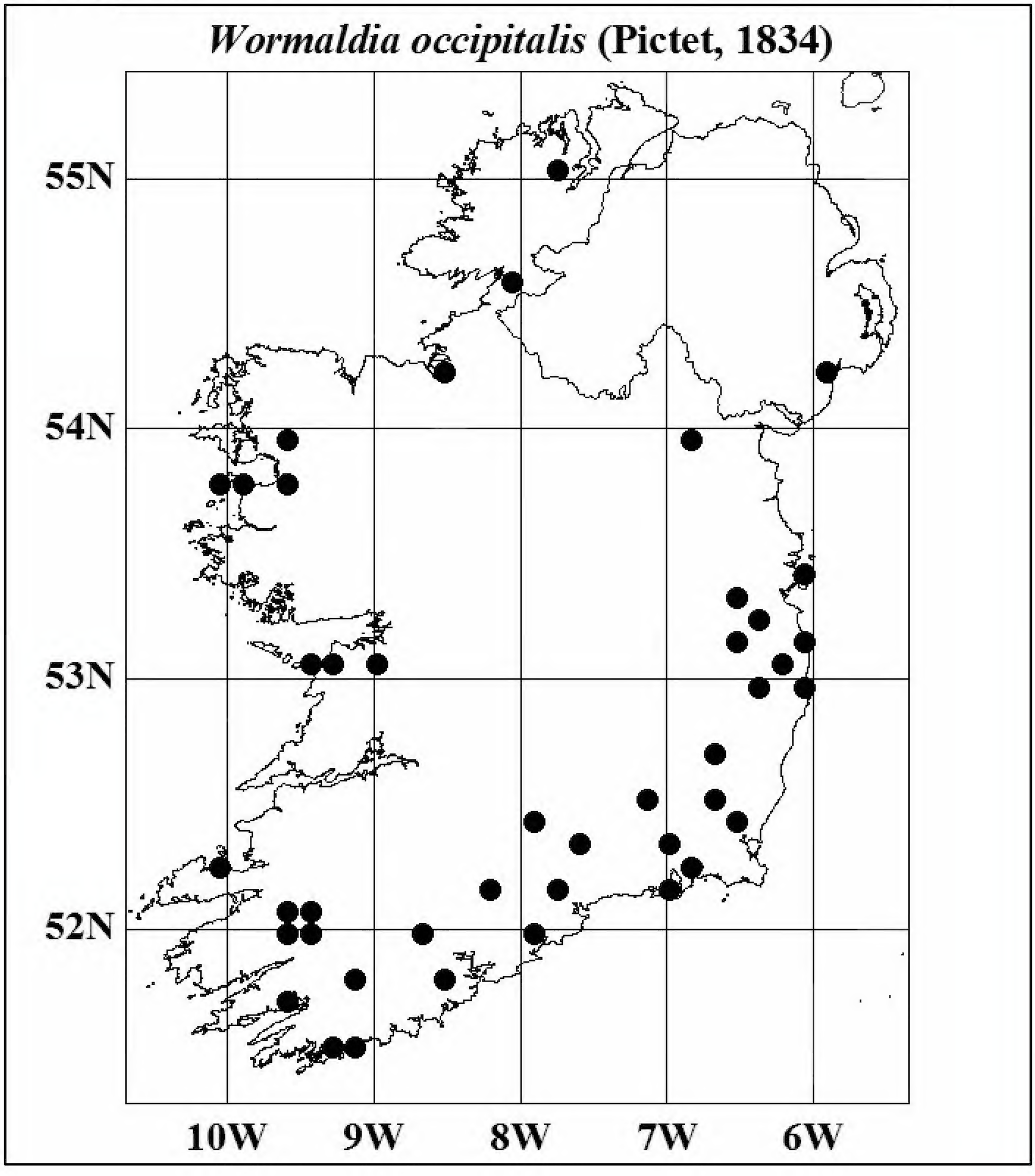


FIGURE 391. Known Irish distribution of *Wormaldia subnigra* McLachlan, 1865.

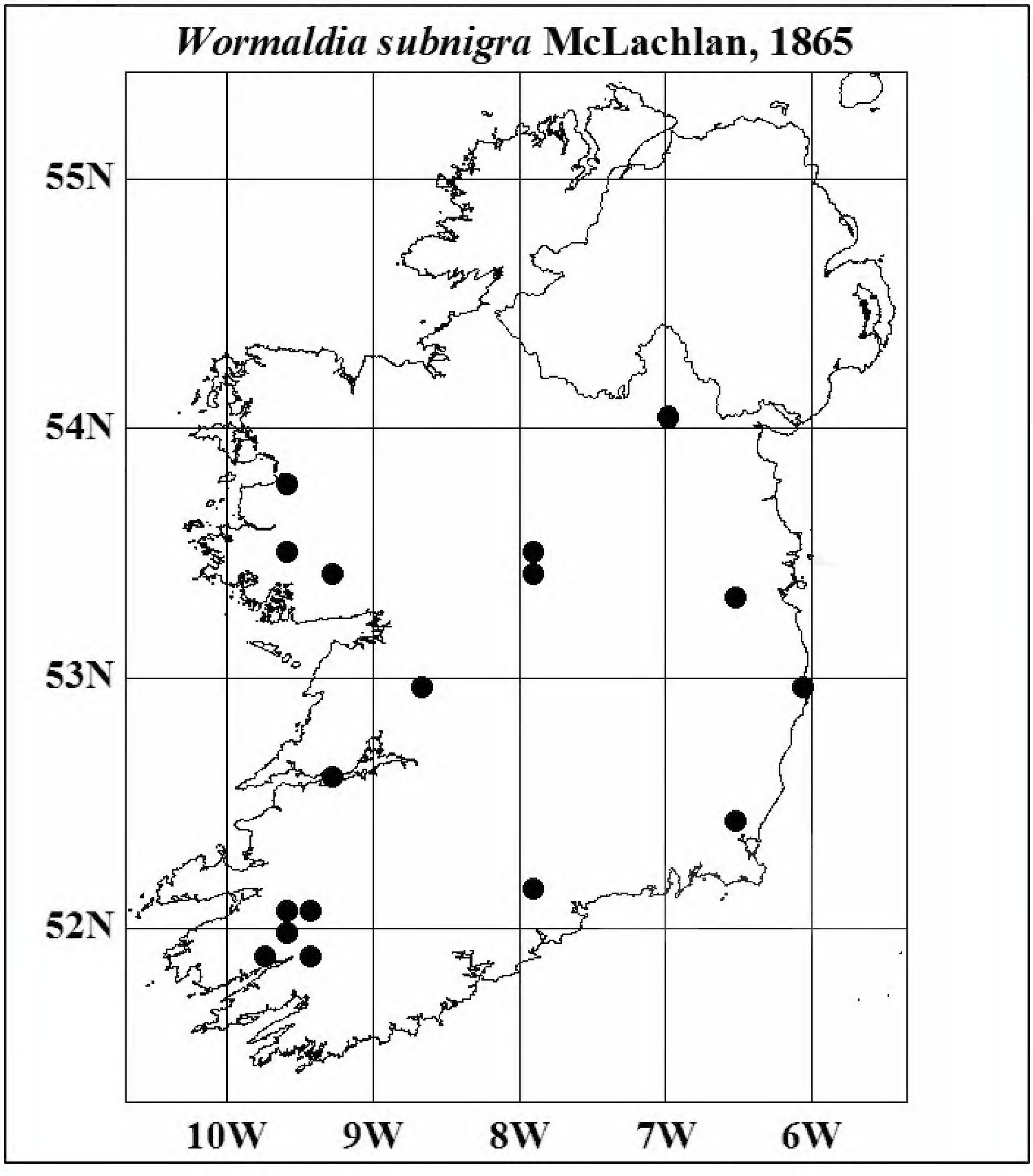


FIGURE 392. Known Irish distribution of *Ecnomus tenellus* (Rambur, 1842).

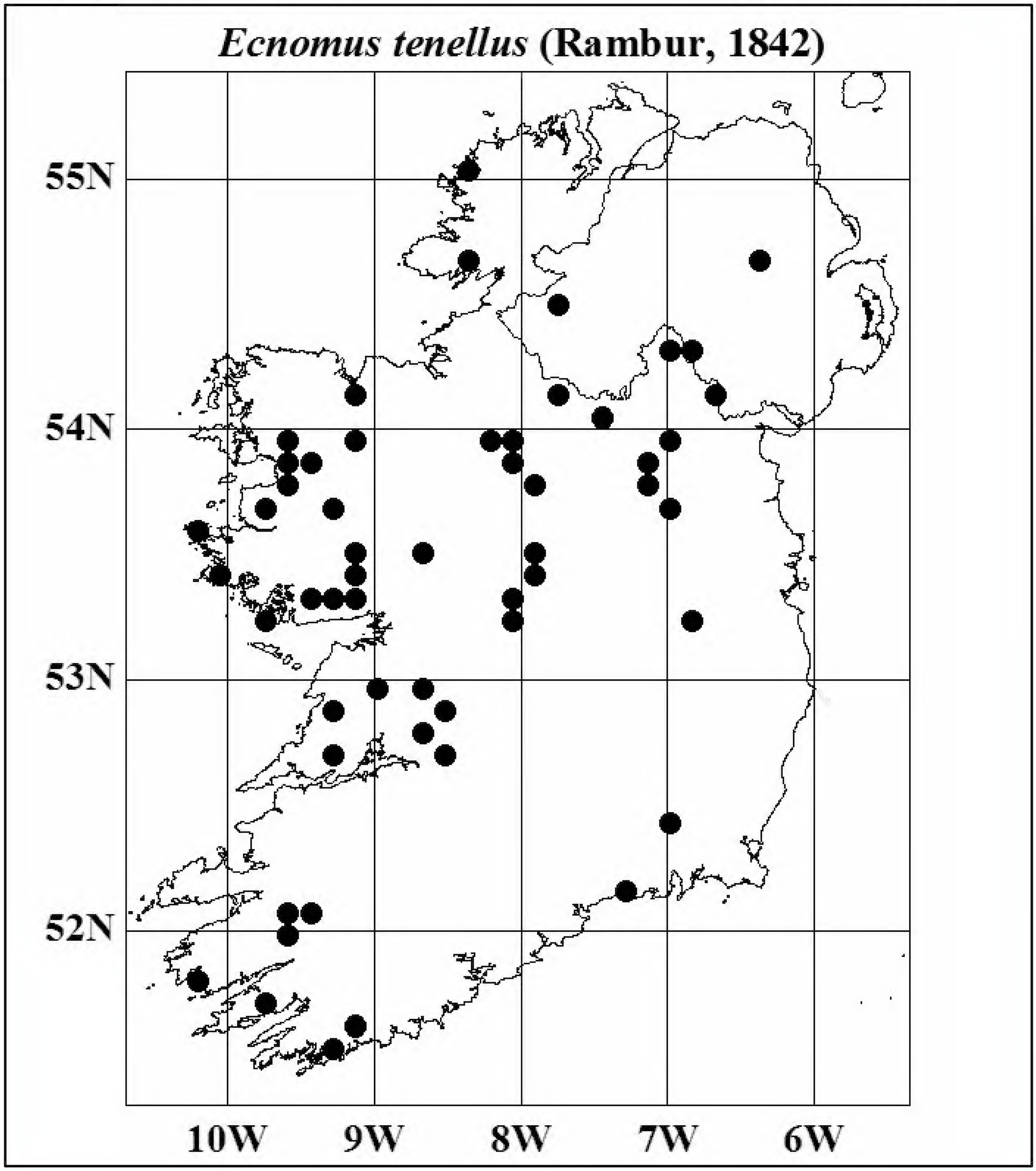


FIGURE 393. Known Irish distribution of *Cyrnus flavidus* McLachlan, 1864.

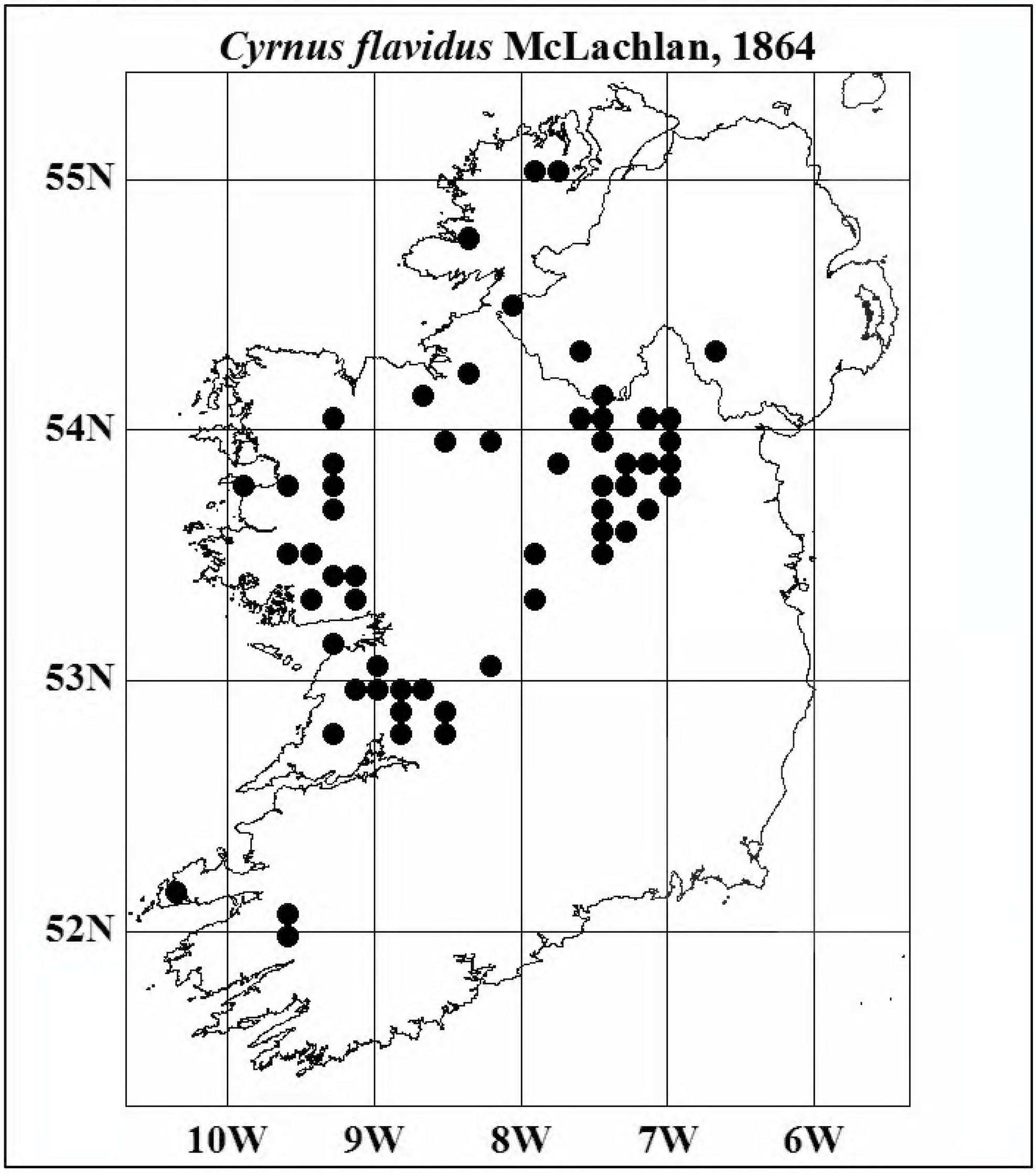


FIGURE 394. Known Irish distribution of *Cyrnus insolutus* McLachlan, 1878.

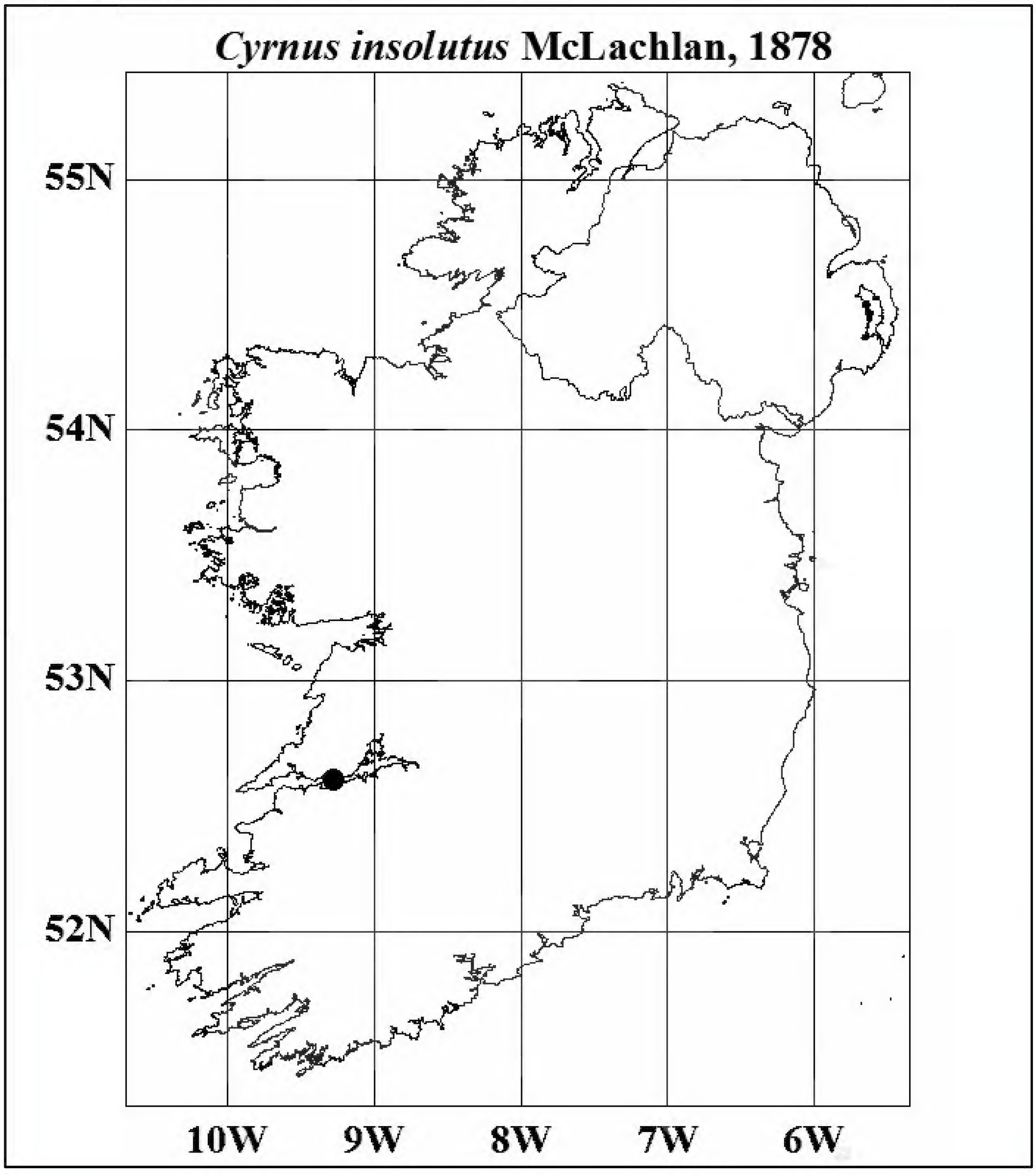


FIGURE 395. Known Irish distribution of *Cyrnus trimaculatus* (Curtis, 1834).

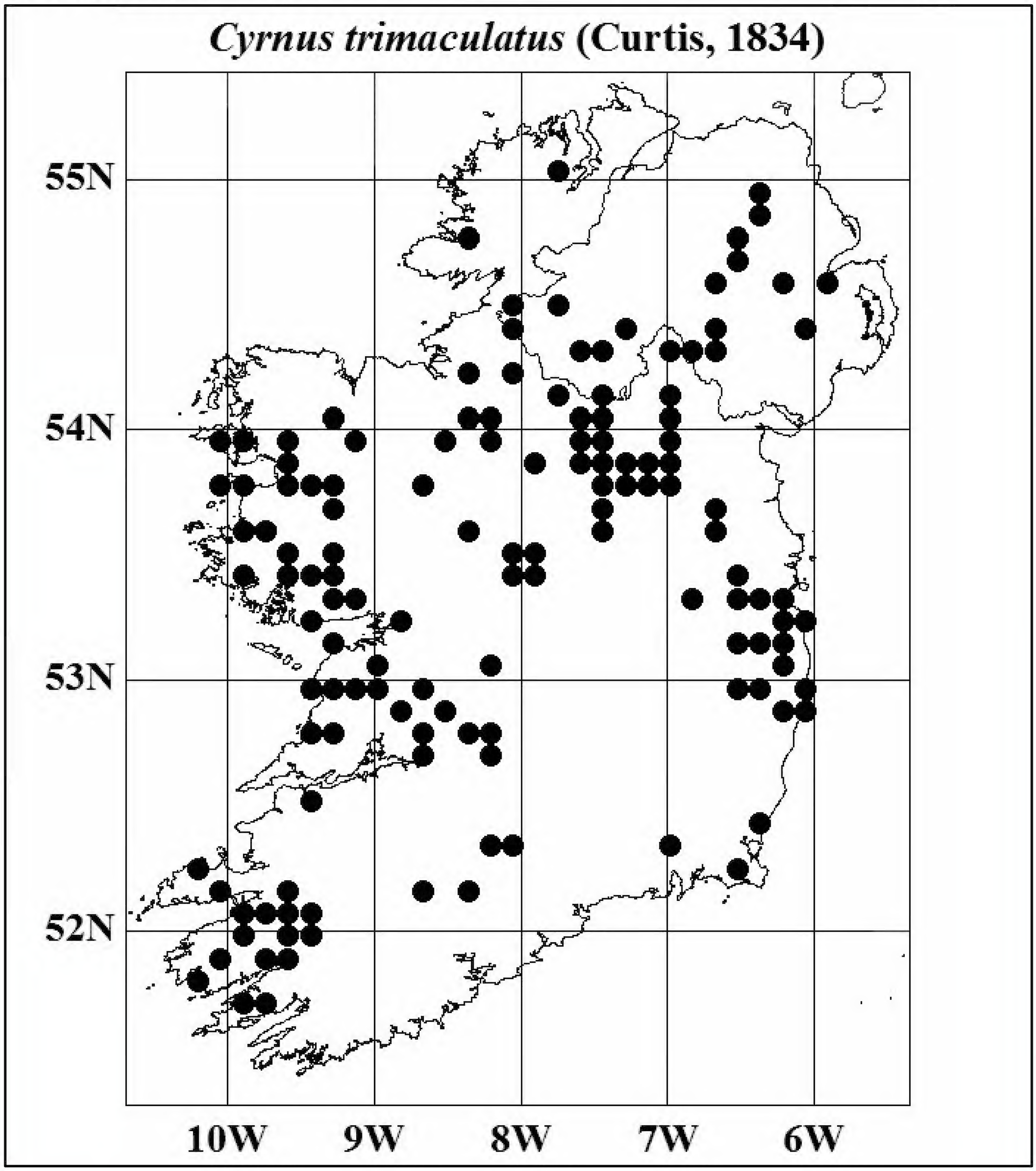


FIGURE 396. Known Irish distribution of *Holocentropus dubius* (Rambur, 1842).

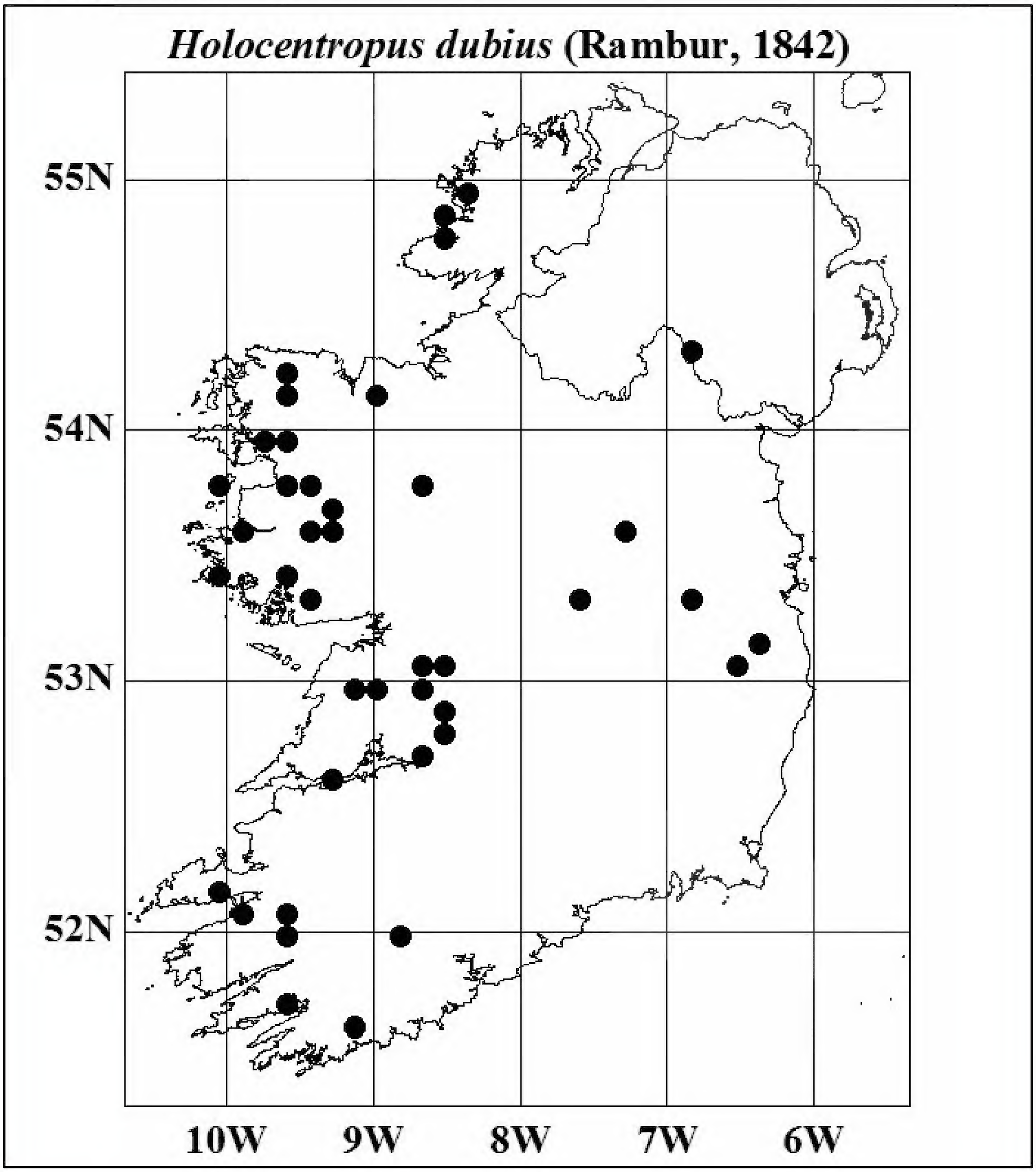


FIGURE 397. Known Irish distribution of *Holocentropus picicornis* (Stephens, 1836).

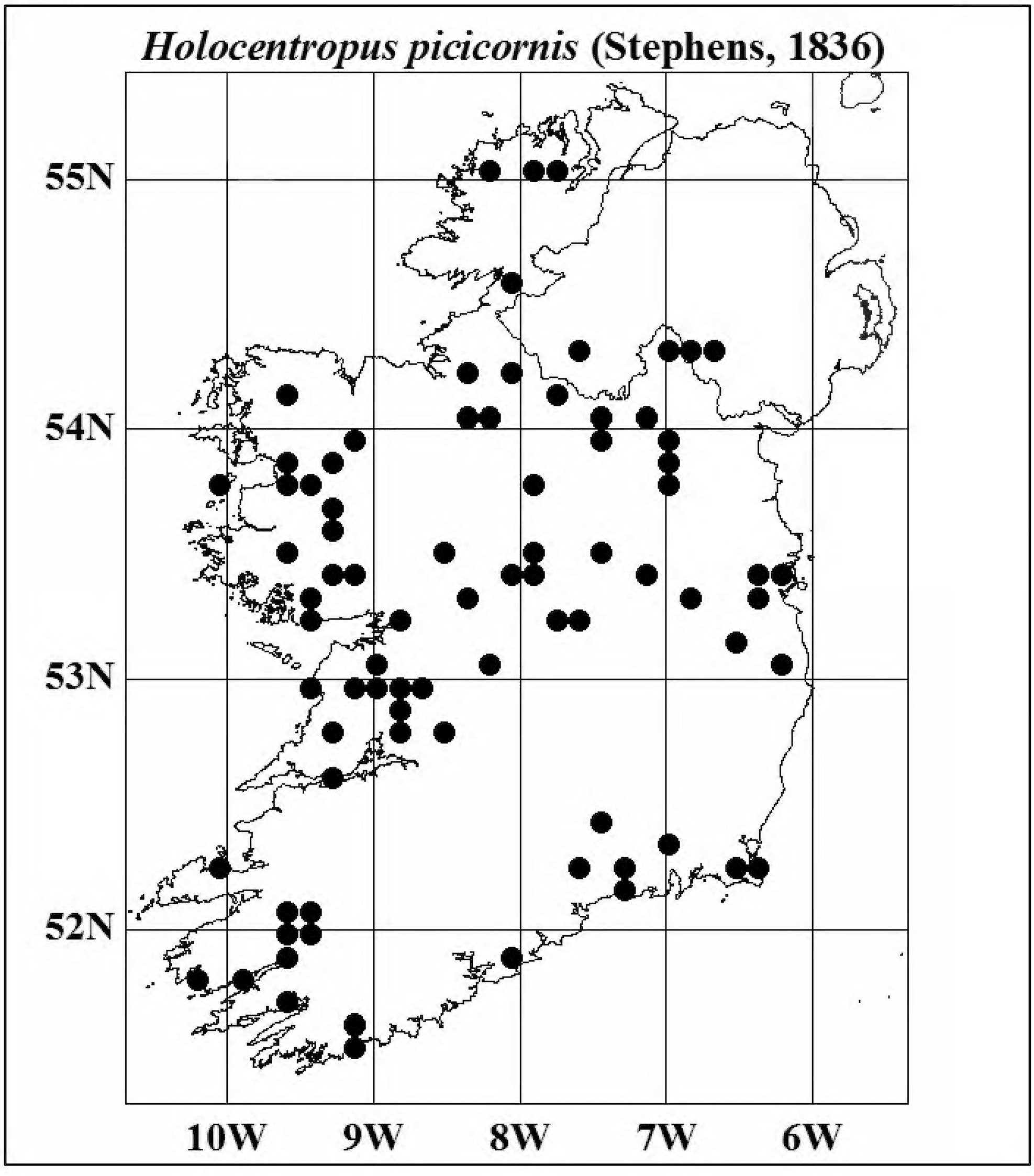


FIGURE 398. Known Irish distribution of *Neureclipsis bimaculata* (Linnaeus, 1758).

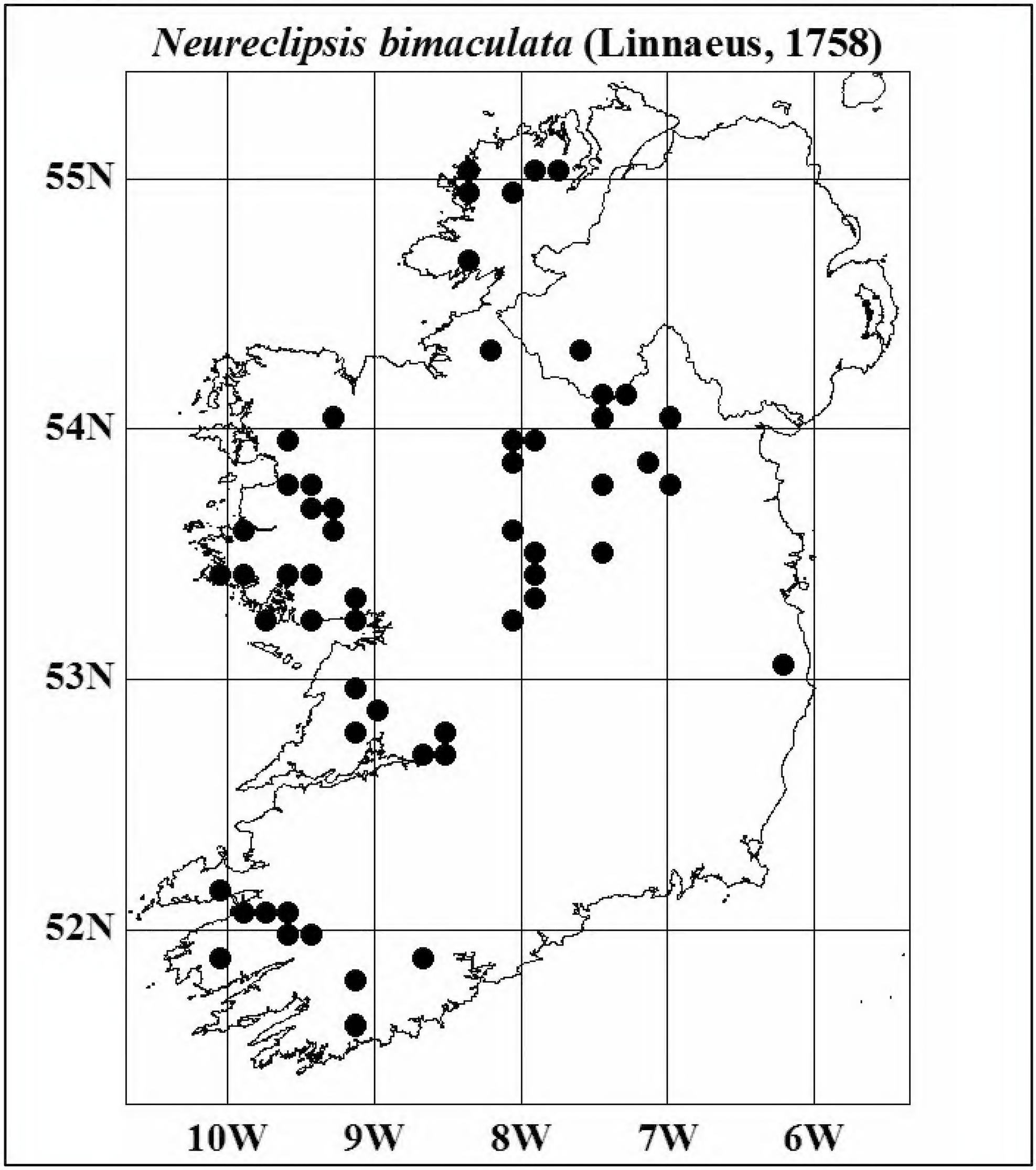


FIGURE 399. Known Irish distribution of *Plectrocnemia conspersa* (Curtis, 1834).

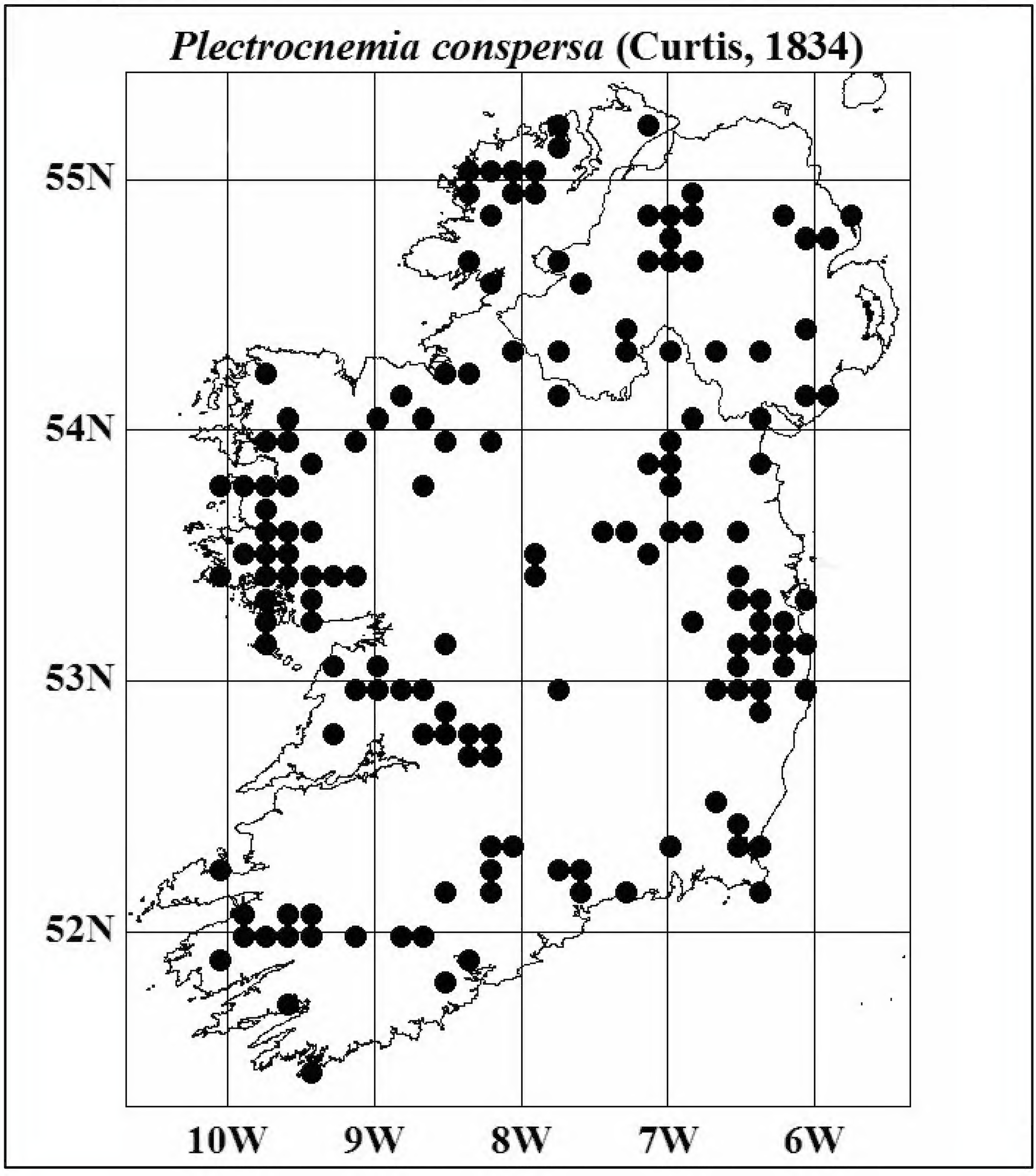


FIGURE 400. Known Irish distribution of *Plectrocnemia geniculata* McLachlan, 1871.

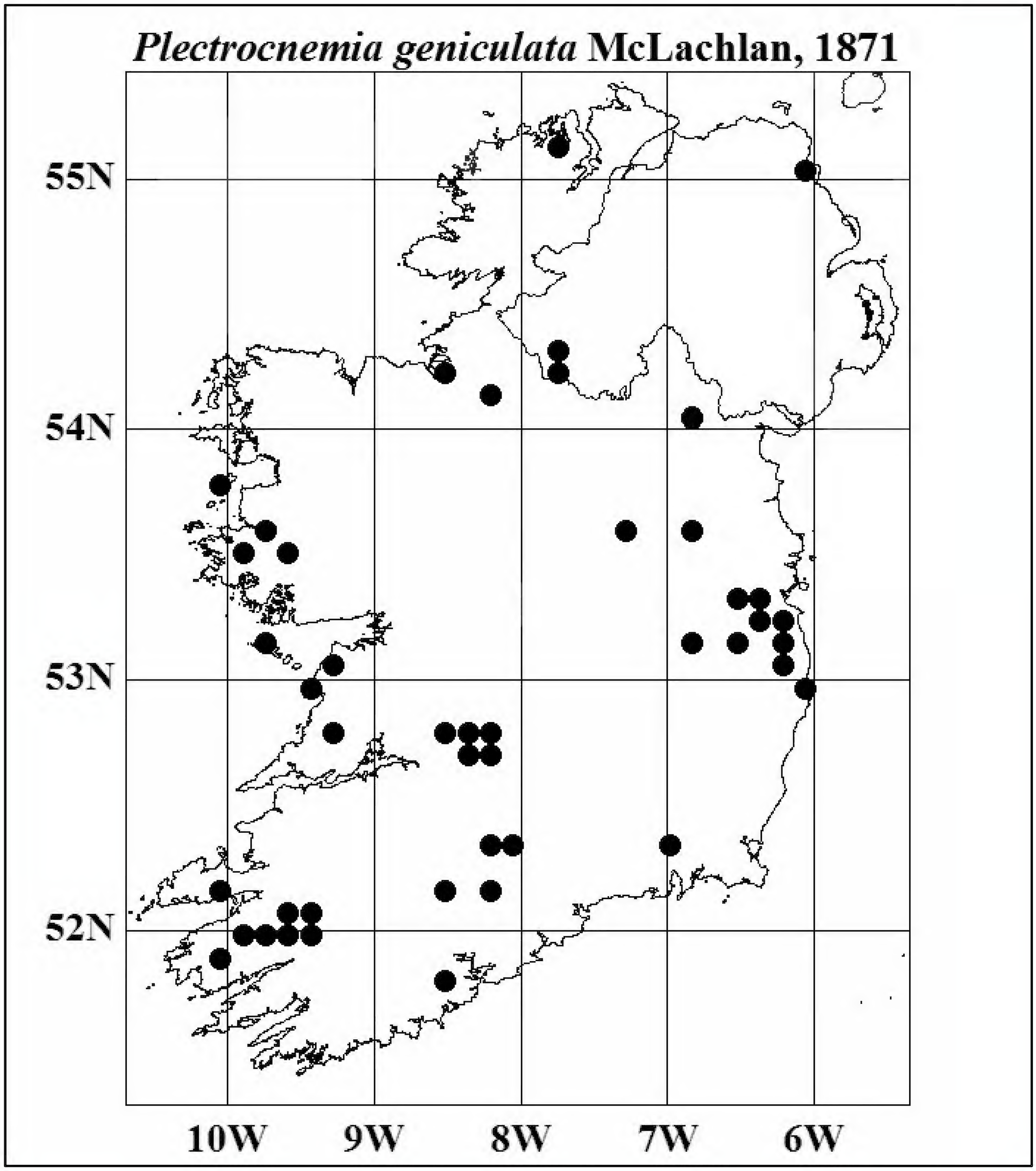


FIGURE 401. Known Irish distribution of *Polycentropus flavomaculatus* (Pictet, 1834).

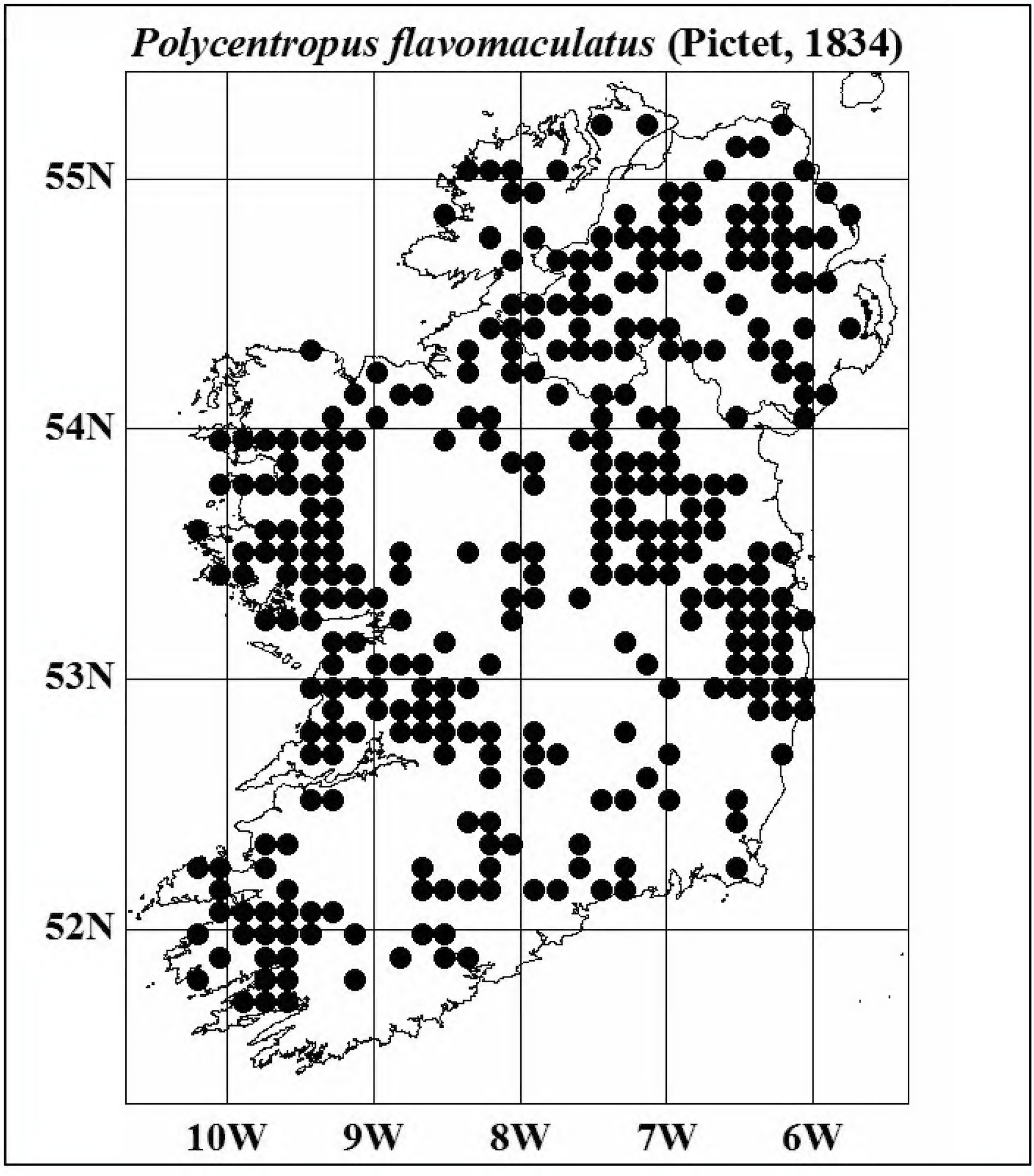


FIGURE 402. Known Irish distribution of *Polycentropus irroratus* (Curtis, 1835).

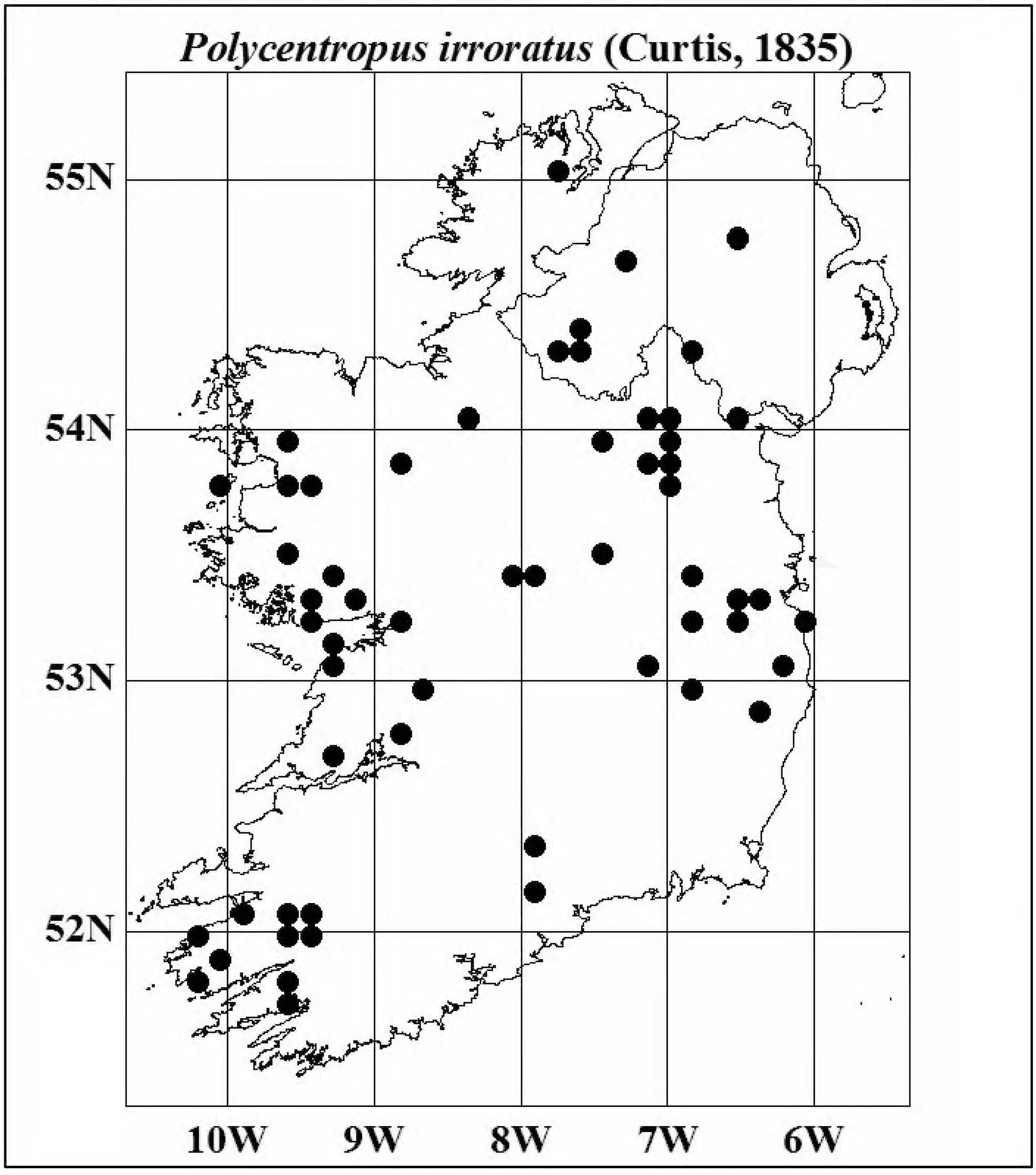


FIGURE 403. Known Irish distribution of *Polycentropus kingi* McLachlan, 1881.

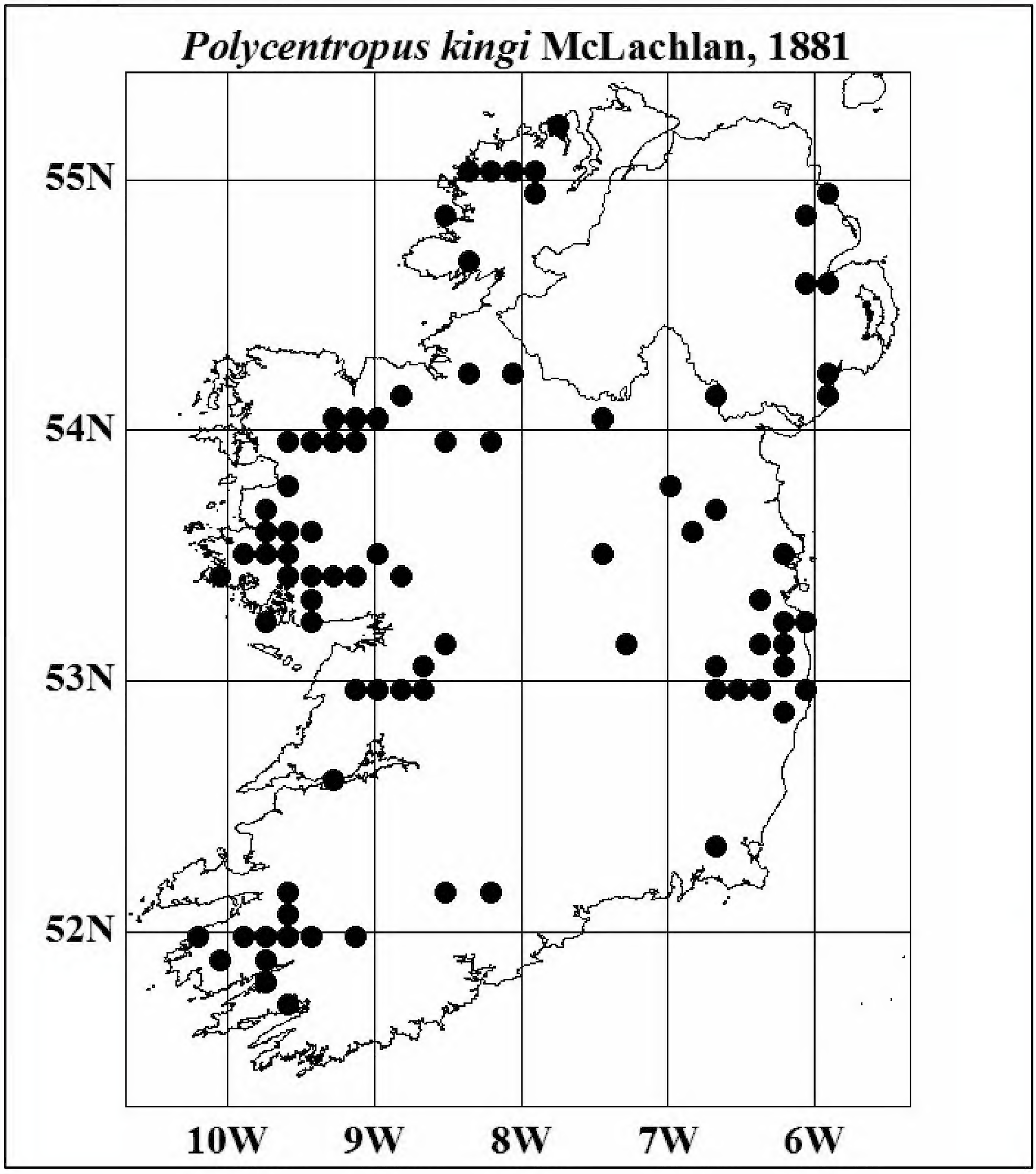


FIGURE 404. Known Irish distribution of *Lype phaeopa* (Stephens, 1836).

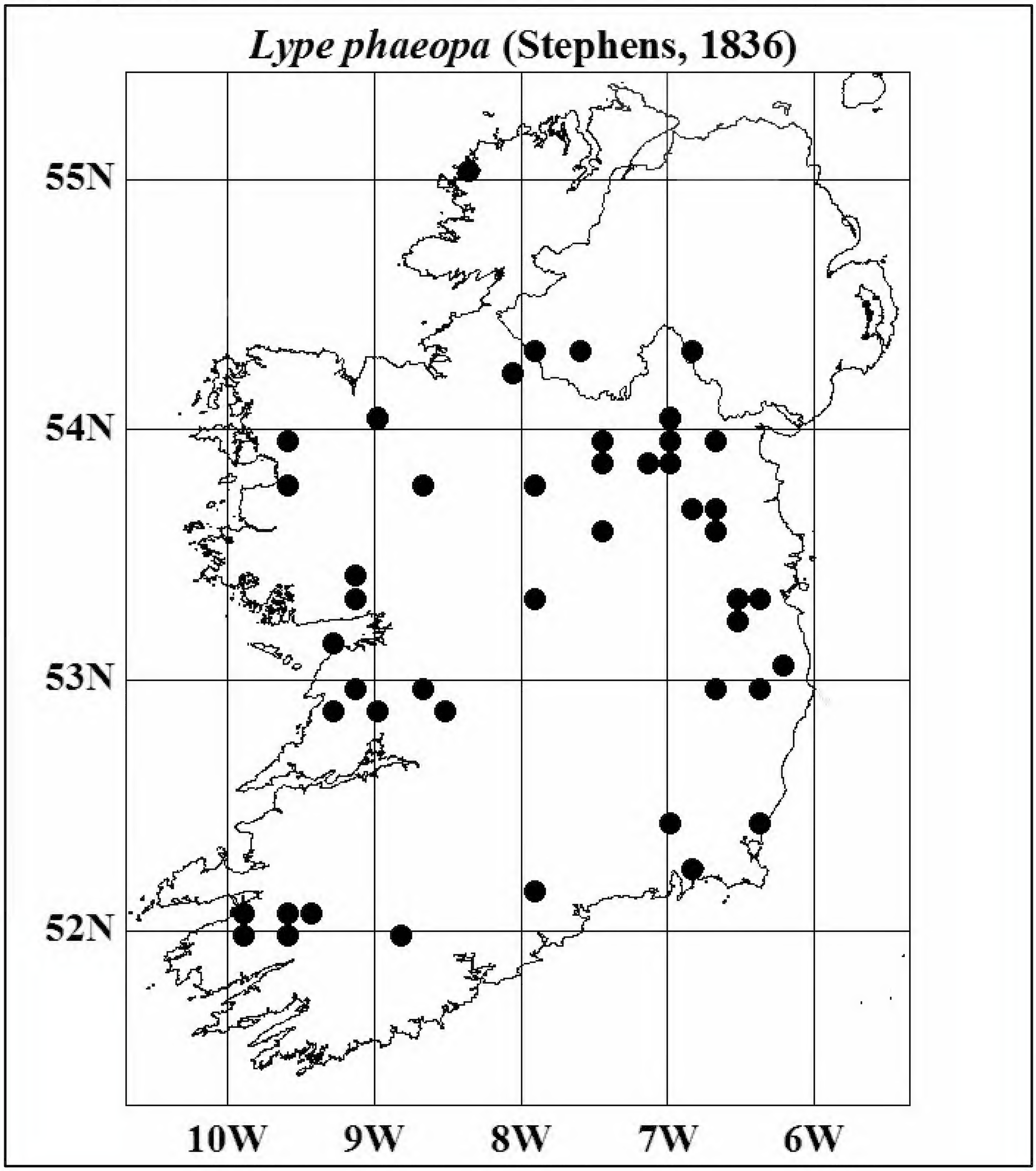


FIGURE 405. Known Irish distribution of *Lype reducta* (Hagen, 1868).

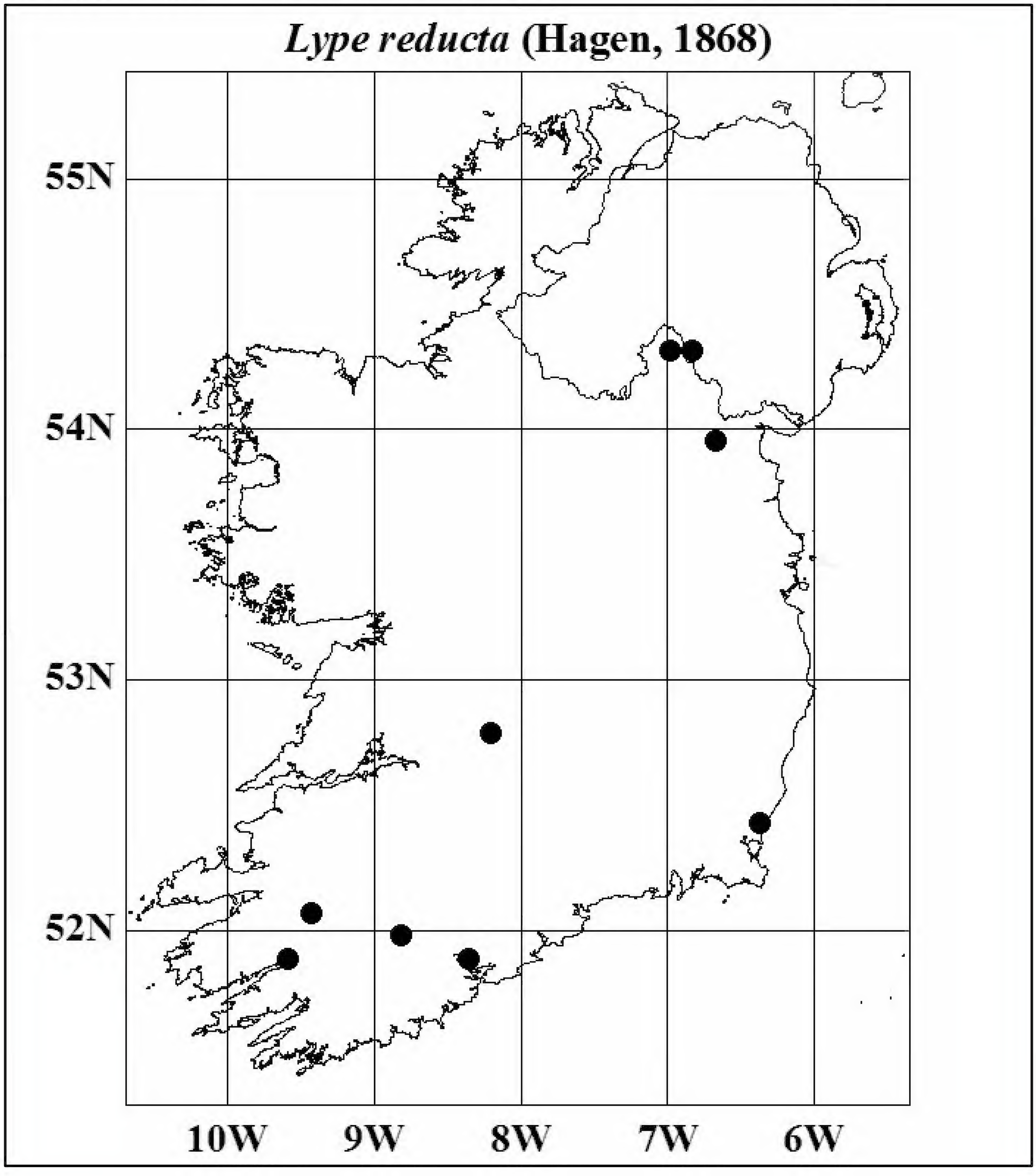


FIGURE 406. Known Irish distribution of *Psychomyia fragilis* (Pictet, 1834).

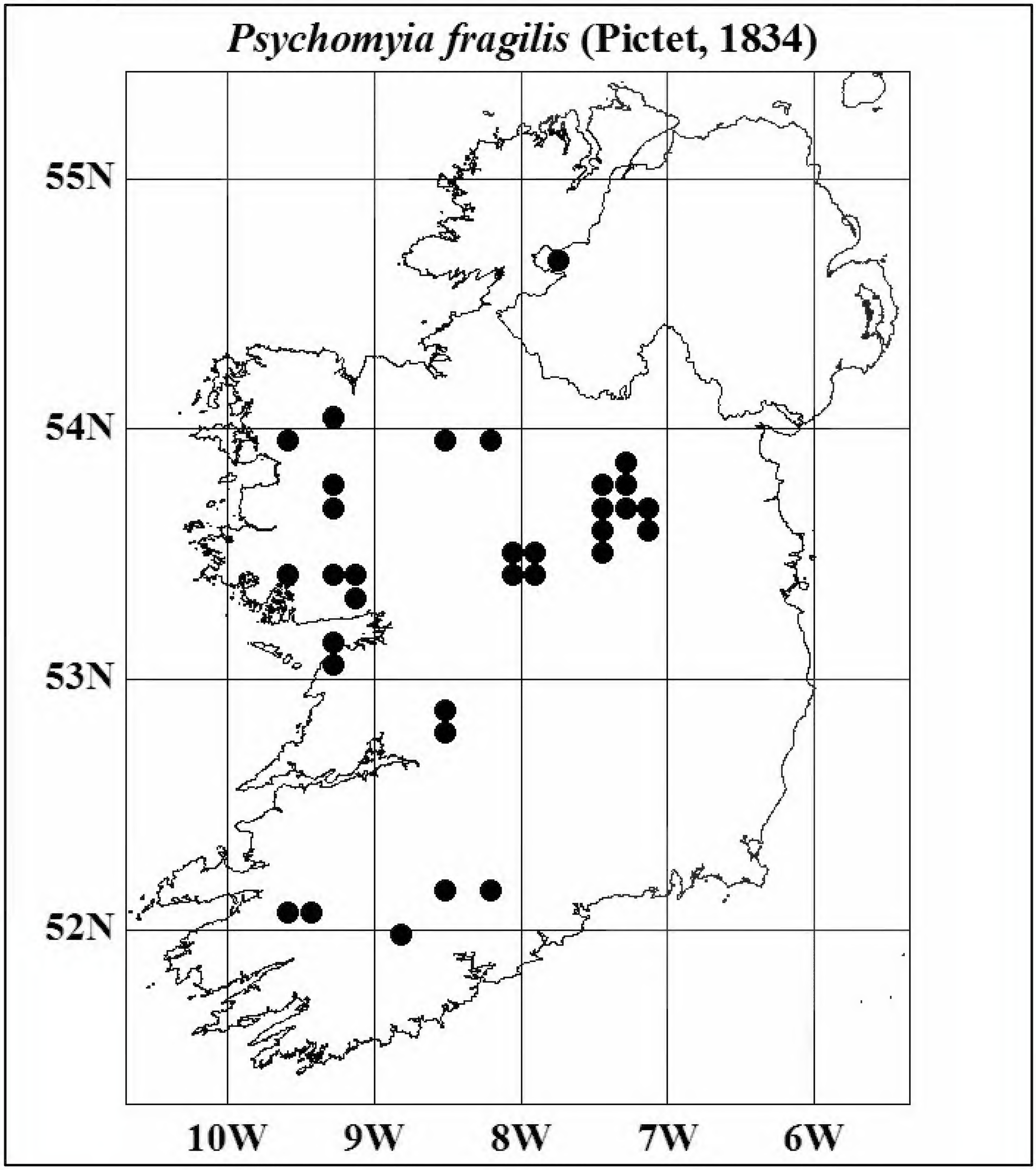


FIGURE 407. Known Irish distribution of *Psychomyia pusilla* (Fabricius, 1781).

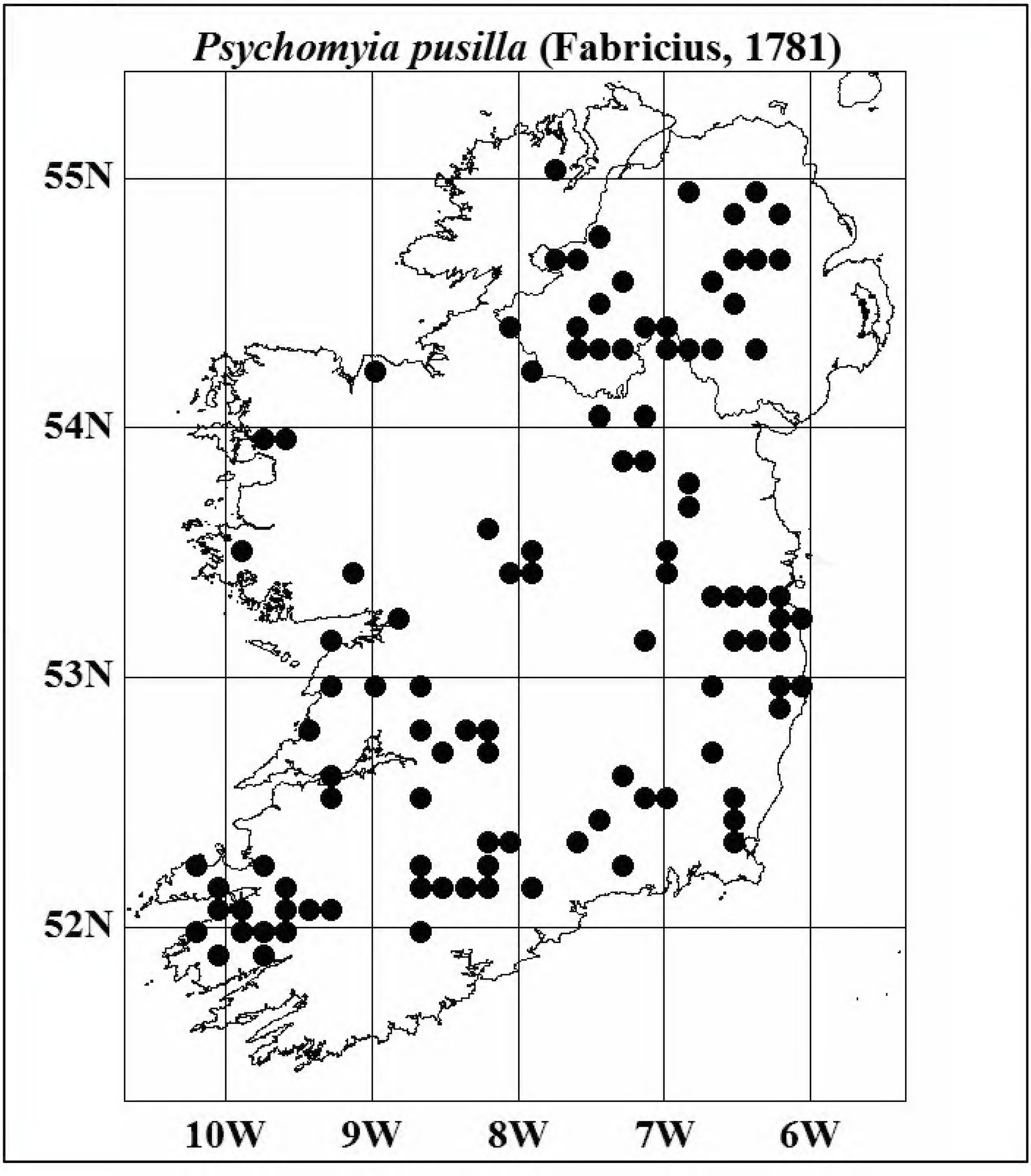


FIGURE 408. Known Irish distribution of *Tinodes dives* (Pictet, 1834).

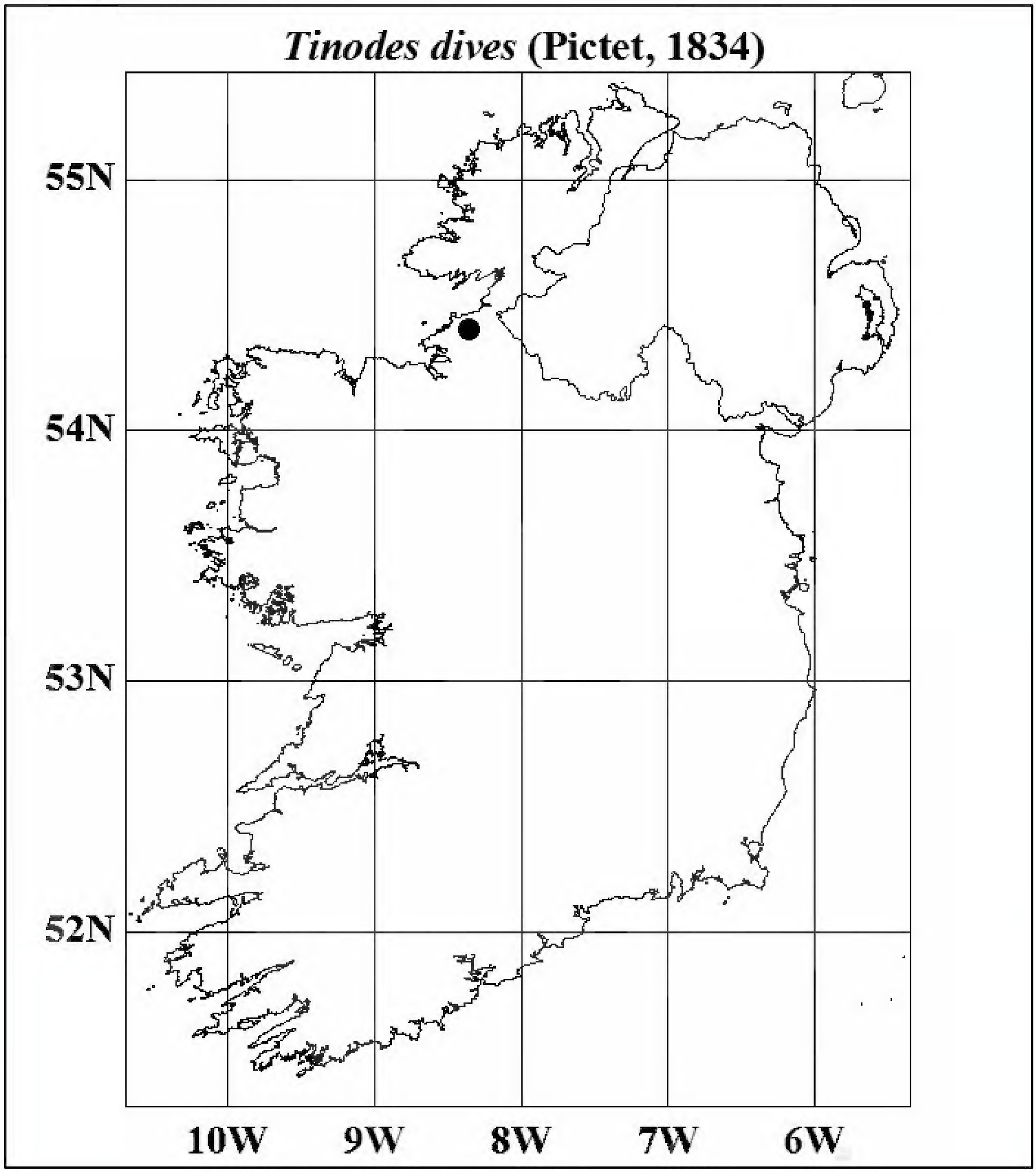


FIGURE 409. Known Irish distribution of *Tinodes maclachlani* Kimmins, 1966.

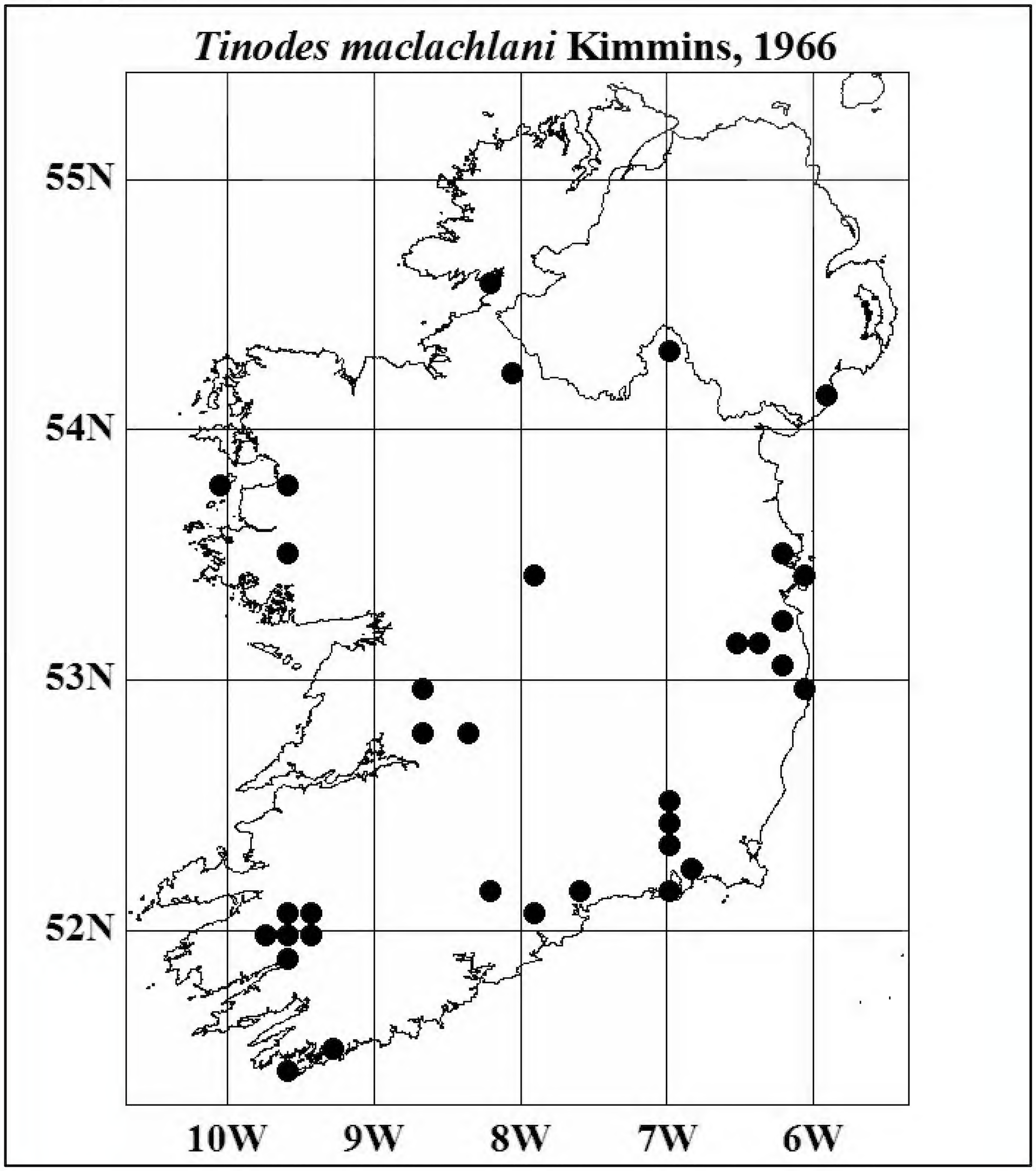


FIGURE 410. Known Irish distribution of *Tinodes maculicornis* (Pictet, 1834).

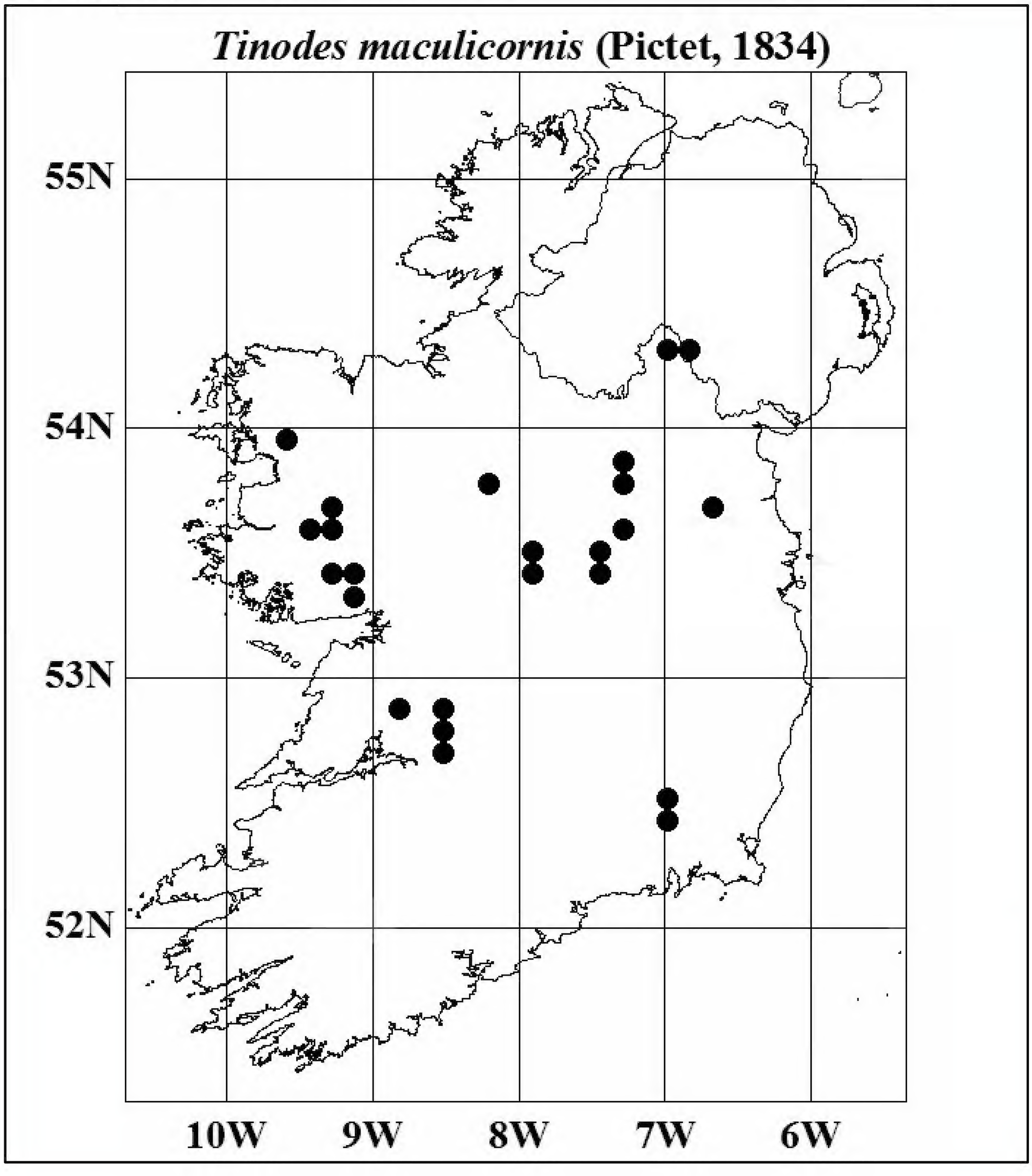


FIGURE 411. Known Irish distribution of *Tinodes unicolor* (Pictet 1834).

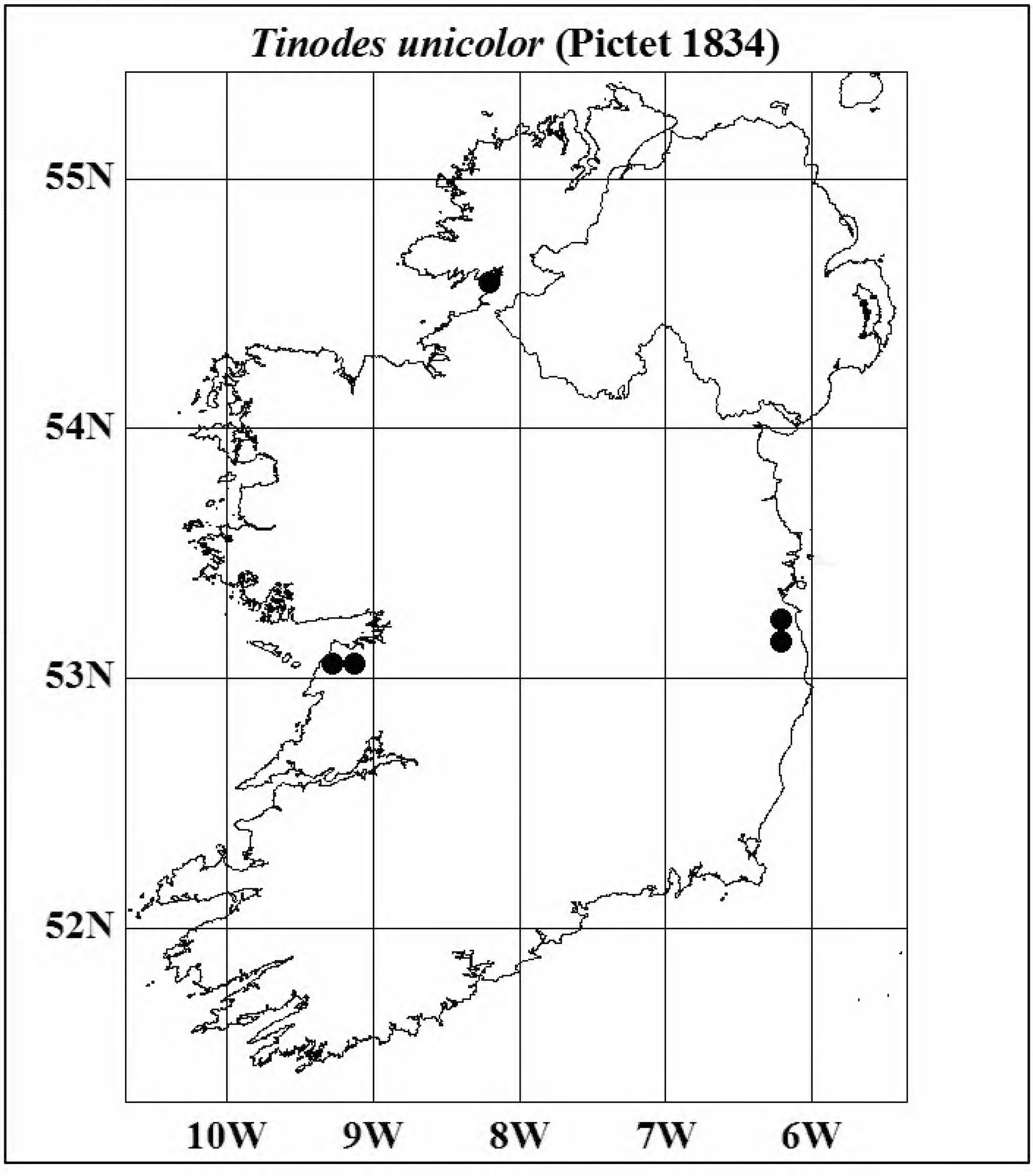


FIGURE 412. Known Irish distribution of *Tinodes waeneri* (Linnaeus, 1758).

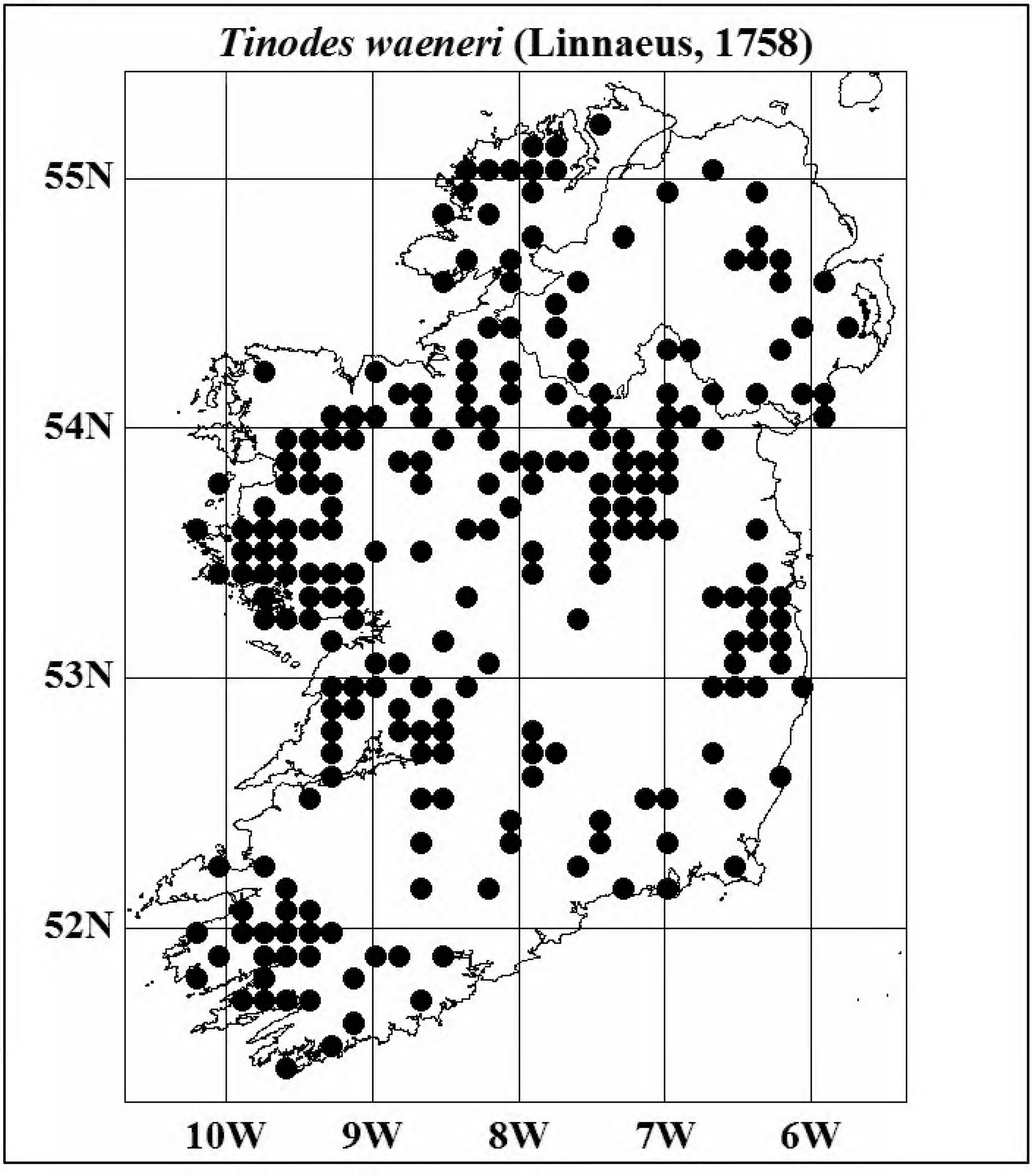


FIGURE 413. Known Irish distribution of *Cheumatopsyche lepida* (Pictet, 1834).

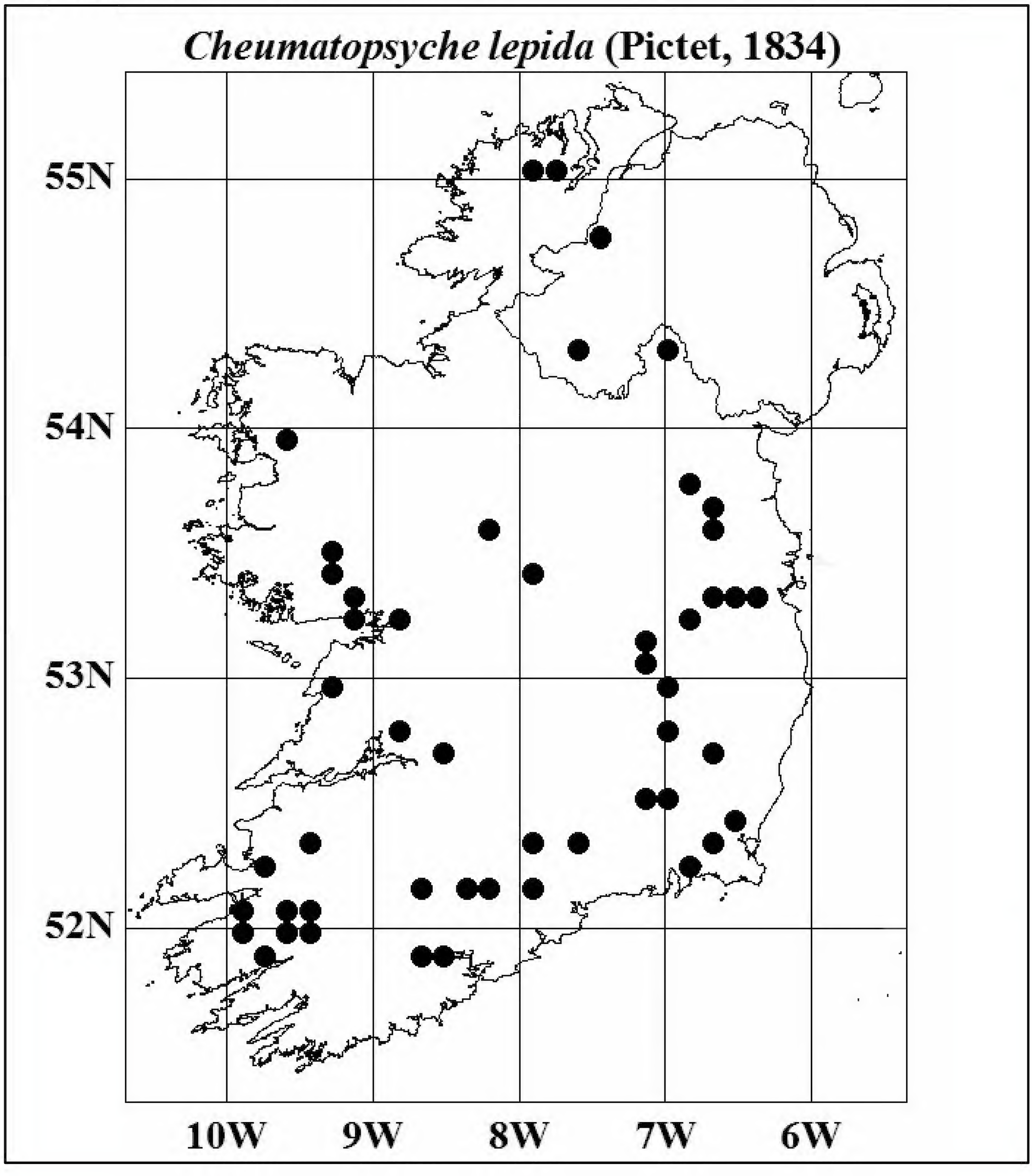


FIGURE 414. Known Irish distribution of *Diplectrona felix* McLachlan, 1878.

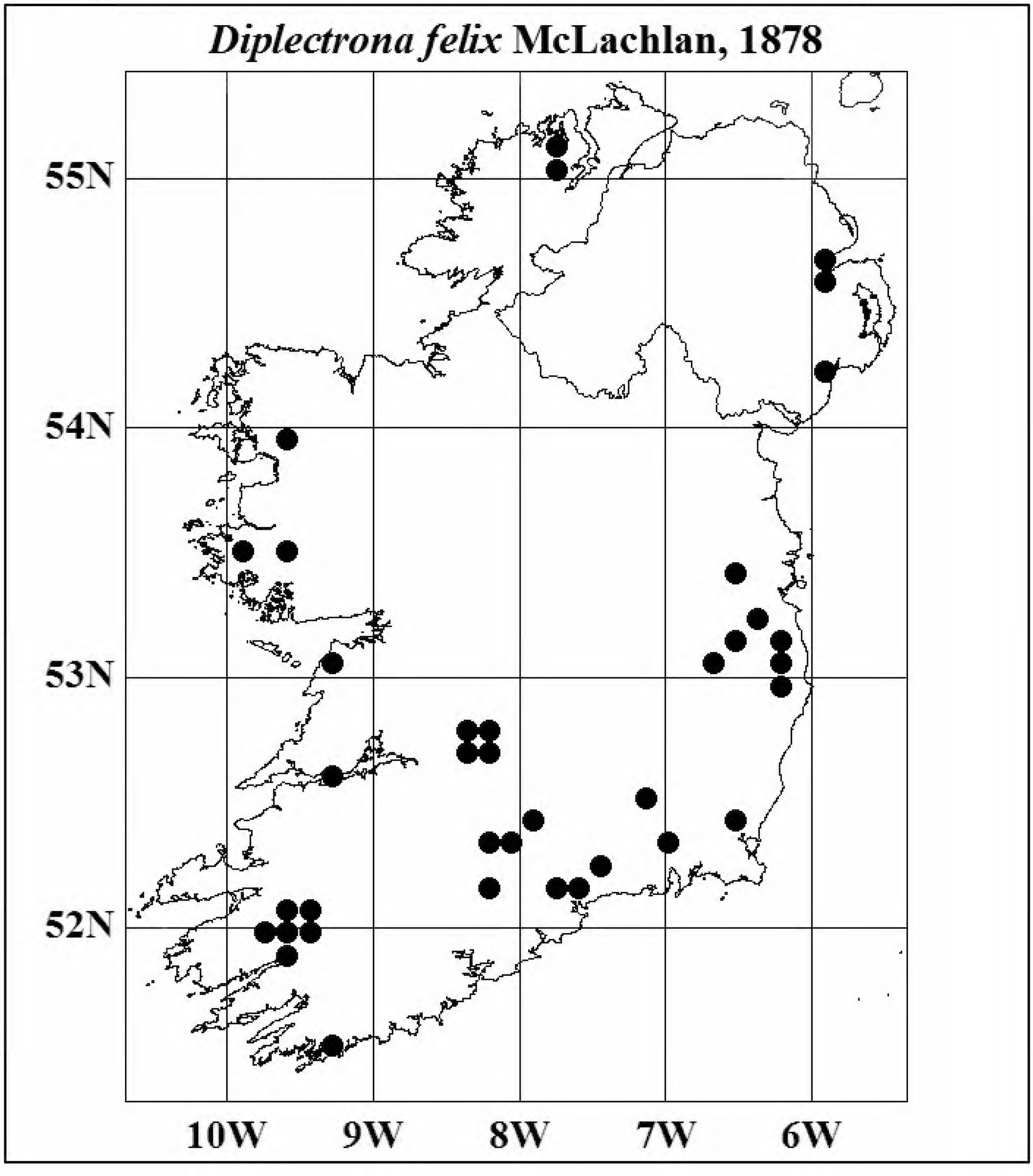


FIGURE 415. Known Irish distribution of *Hydropsyche angustipennis* (Curtis, 1834).

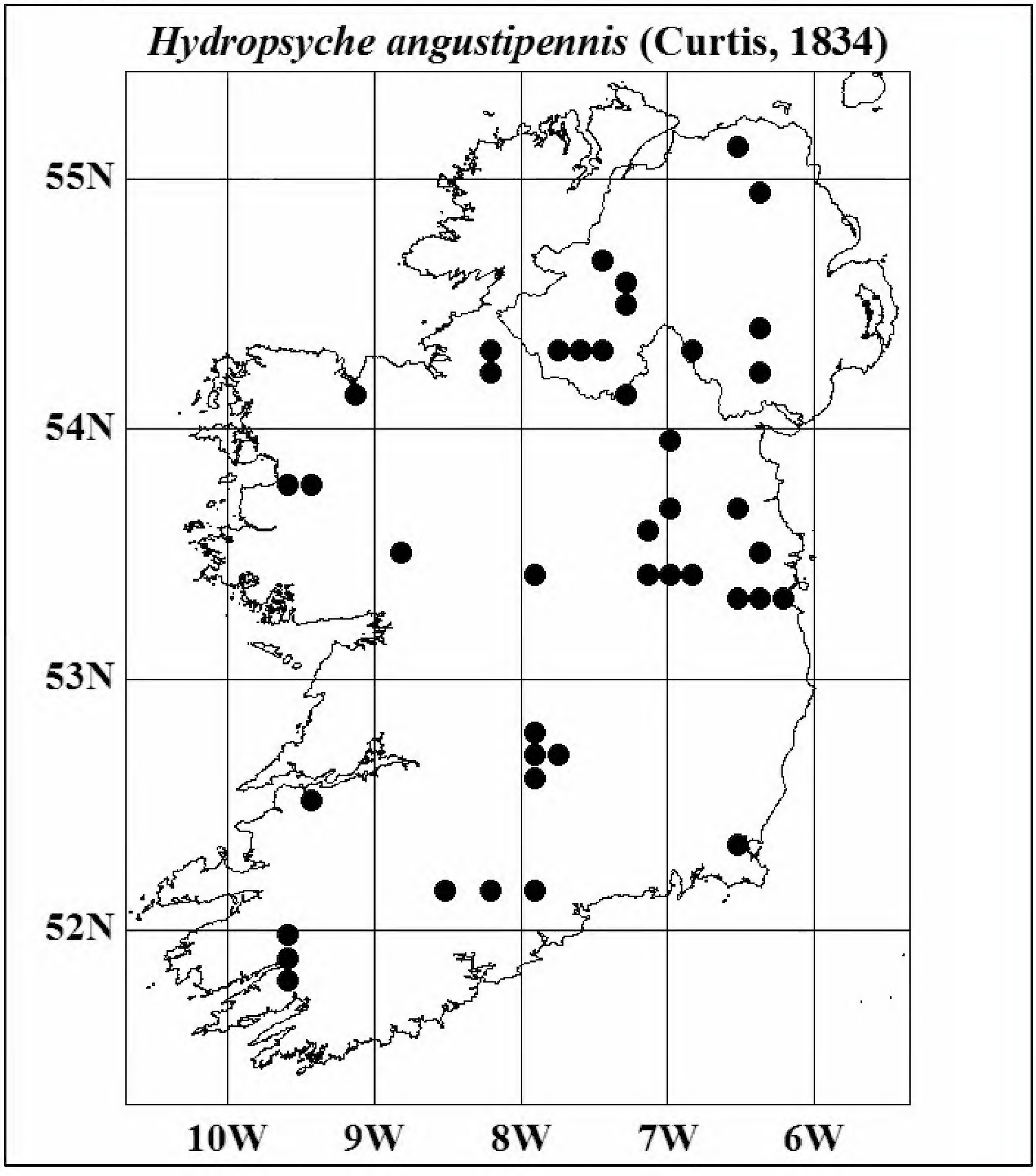


FIGURE 416. Known Irish distribution of *Hydropsyche contubernalis* McLachlan, 1865.

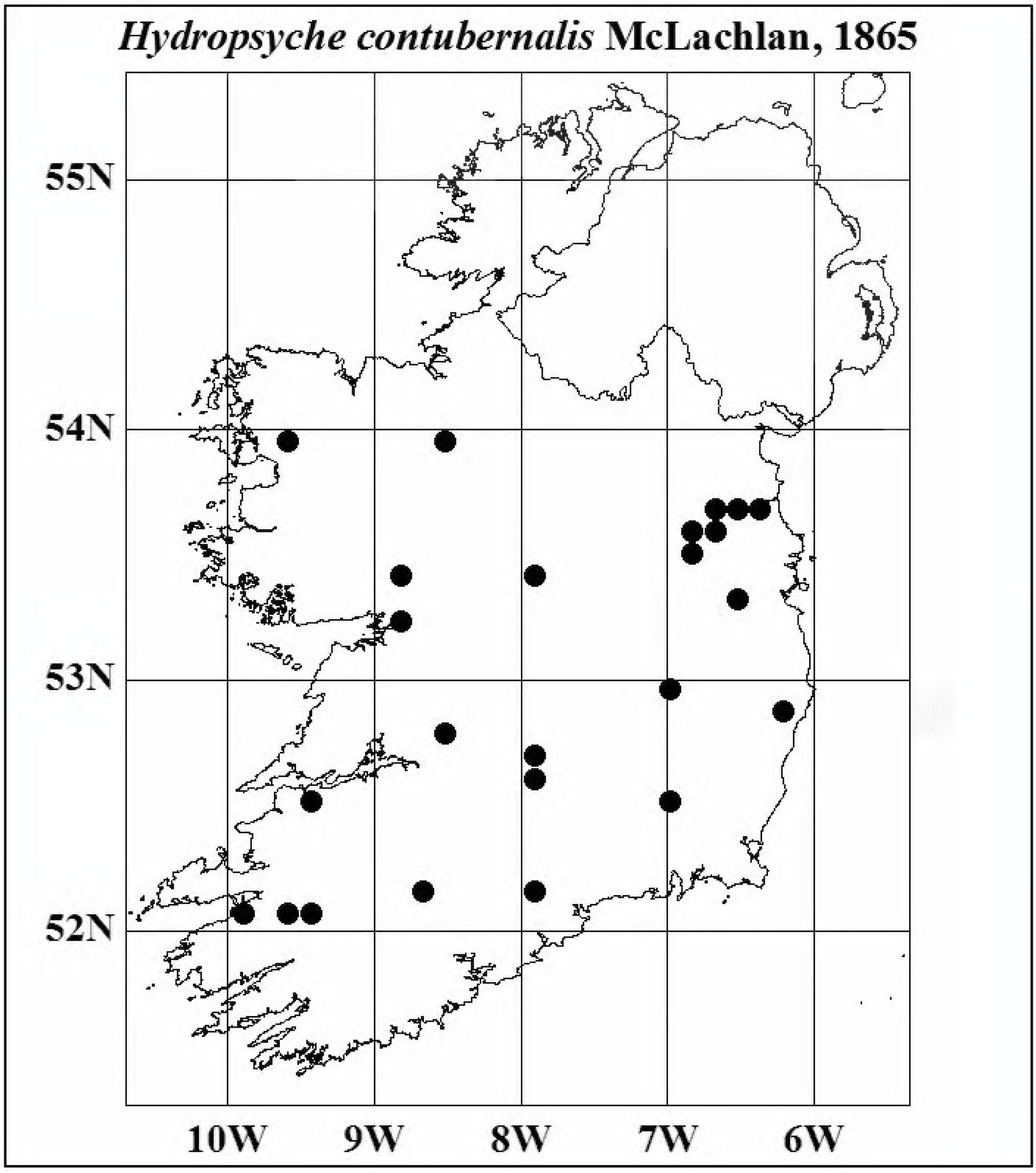


FIGURE 417. Known Irish distribution of *Hydropsyche instabilis* (Curtis, 1834)

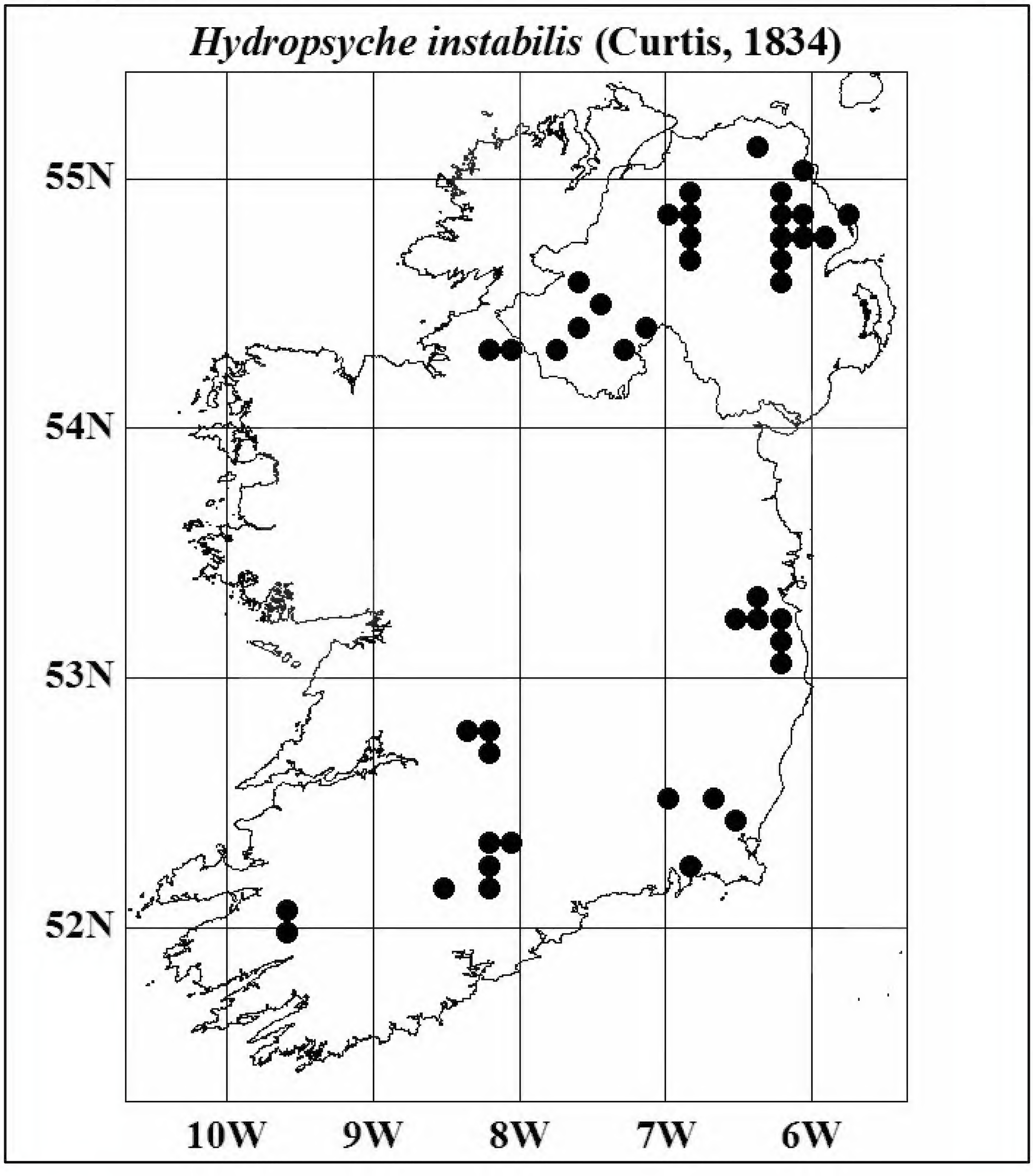


FIGURE 418. Known Irish distribution of *Hydropsyche pellucidula* (Curtis, 1834).

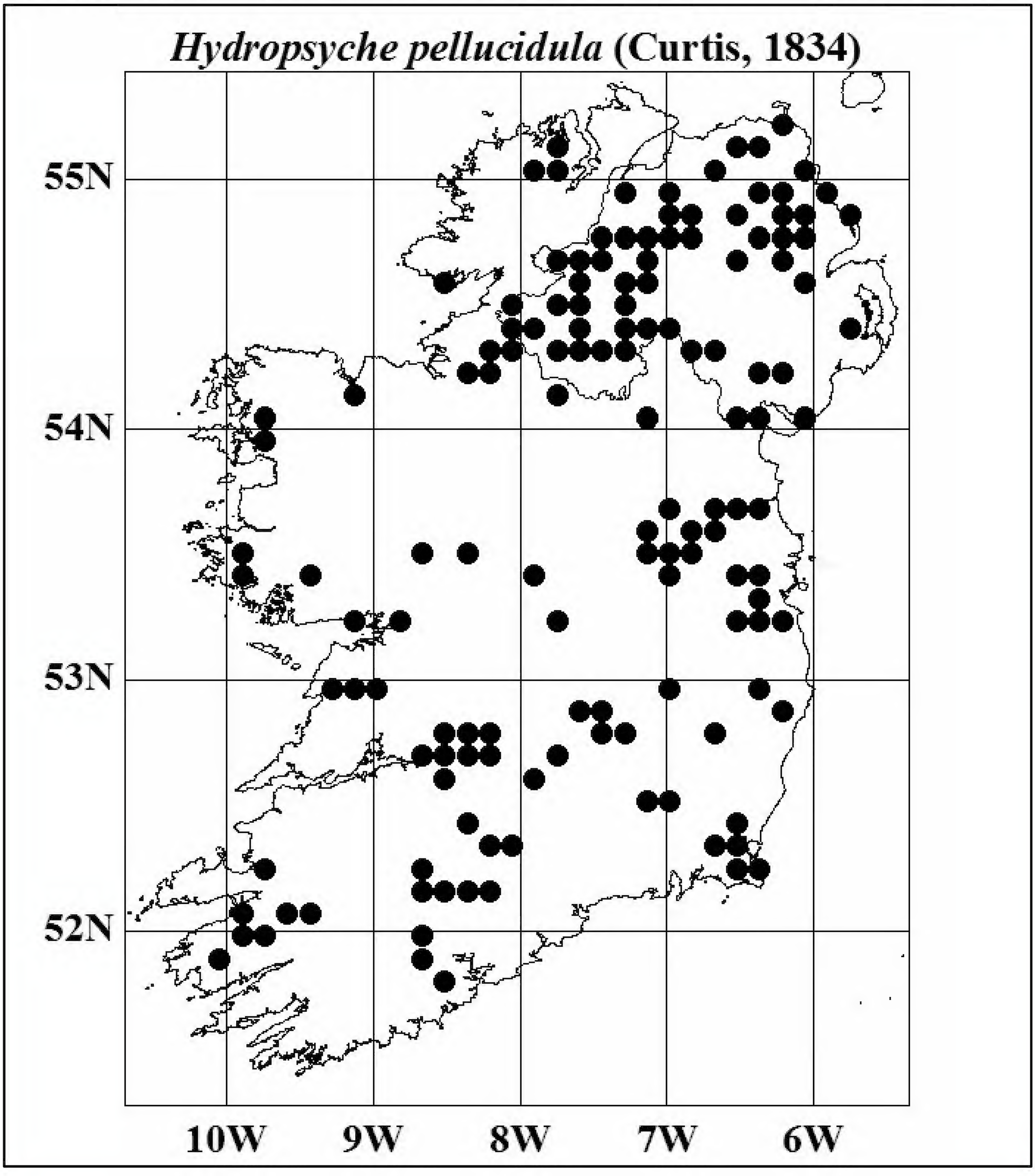


FIGURE 419. Known Irish distribution of *Hydropsyche siltalai* Döhler, 1963.

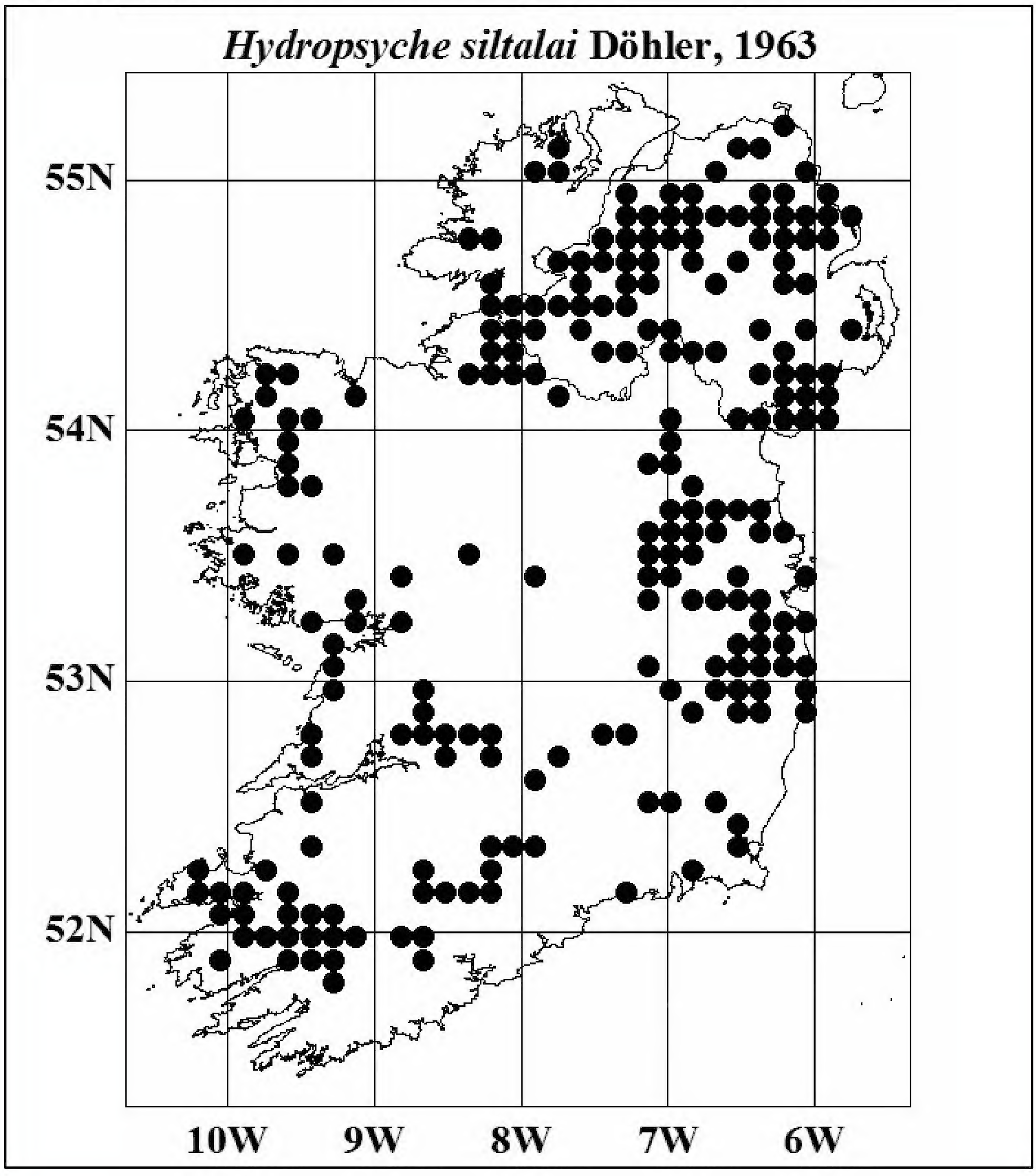


FIGURE 420. Known Irish distribution of *Agrypnia obsoleta* (Hagen, 1864).

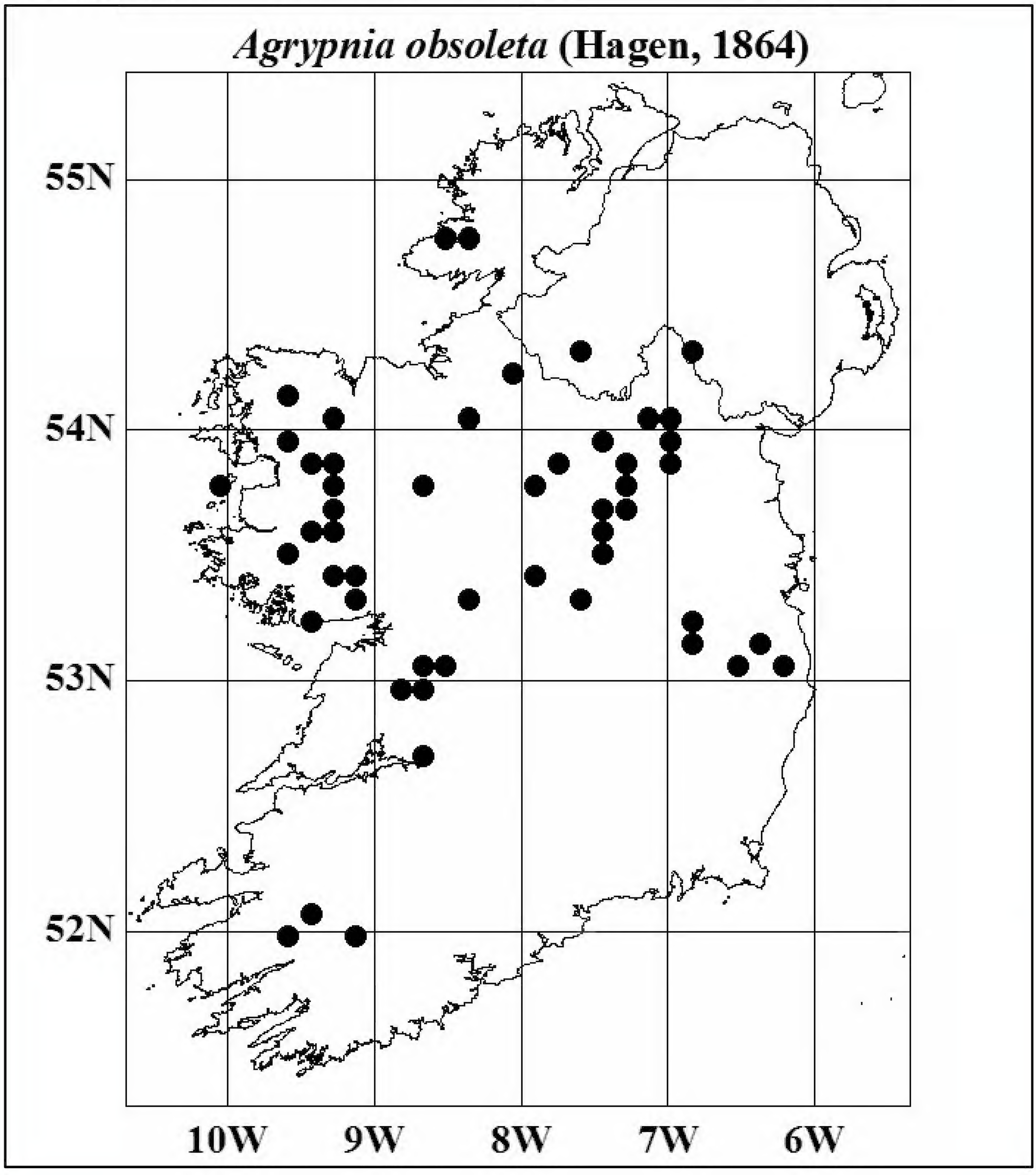


FIGURE 421. Known Irish distribution of *Agrypnia pagetana* Curtis, 1835.

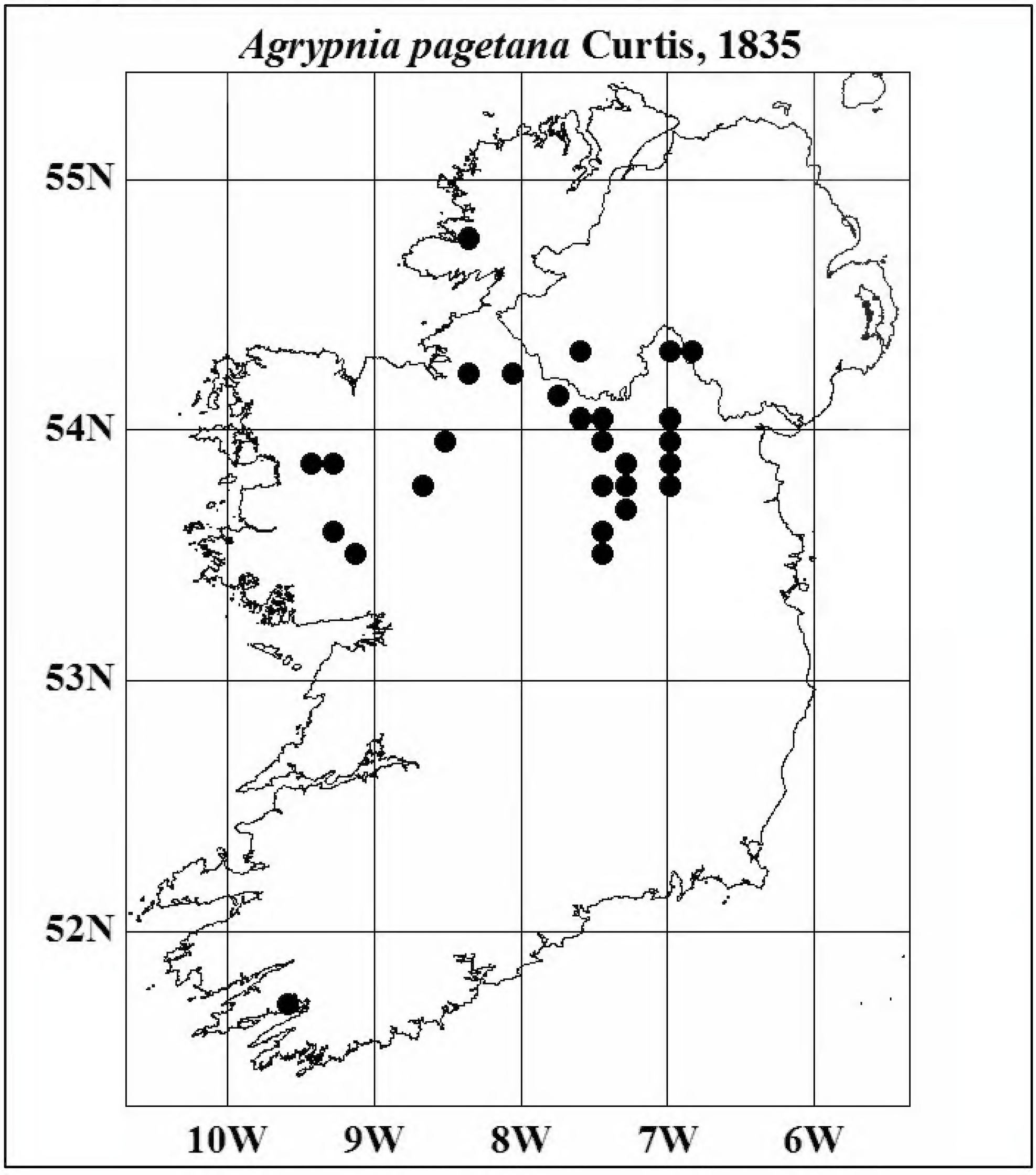


FIGURE 422. Known Irish distribution of *Agrypnia varia* (Fabricius, 1793).

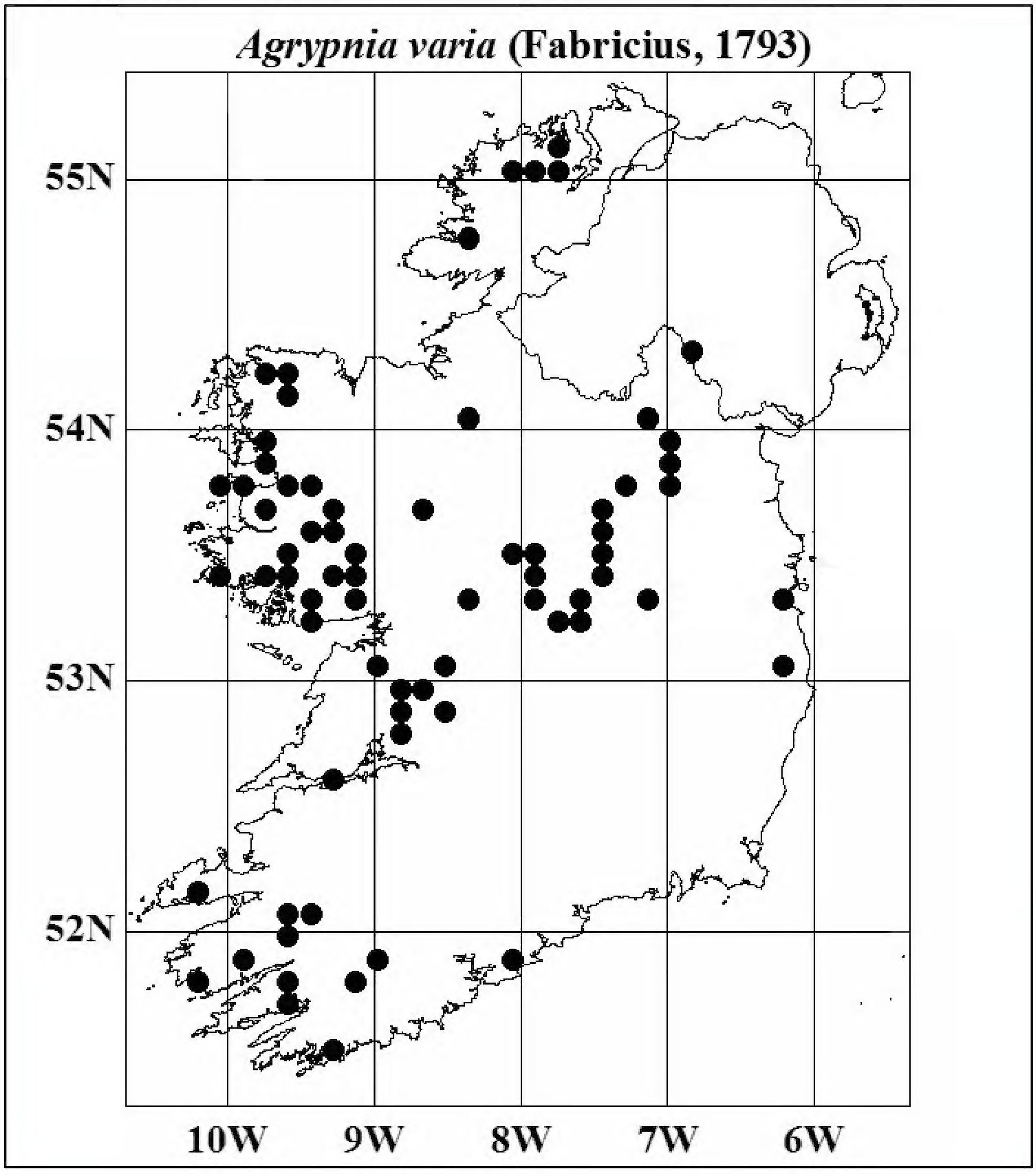


FIGURE 423. Known Irish distribution of *Oligotricha striata* (Linnaeus, 1758).

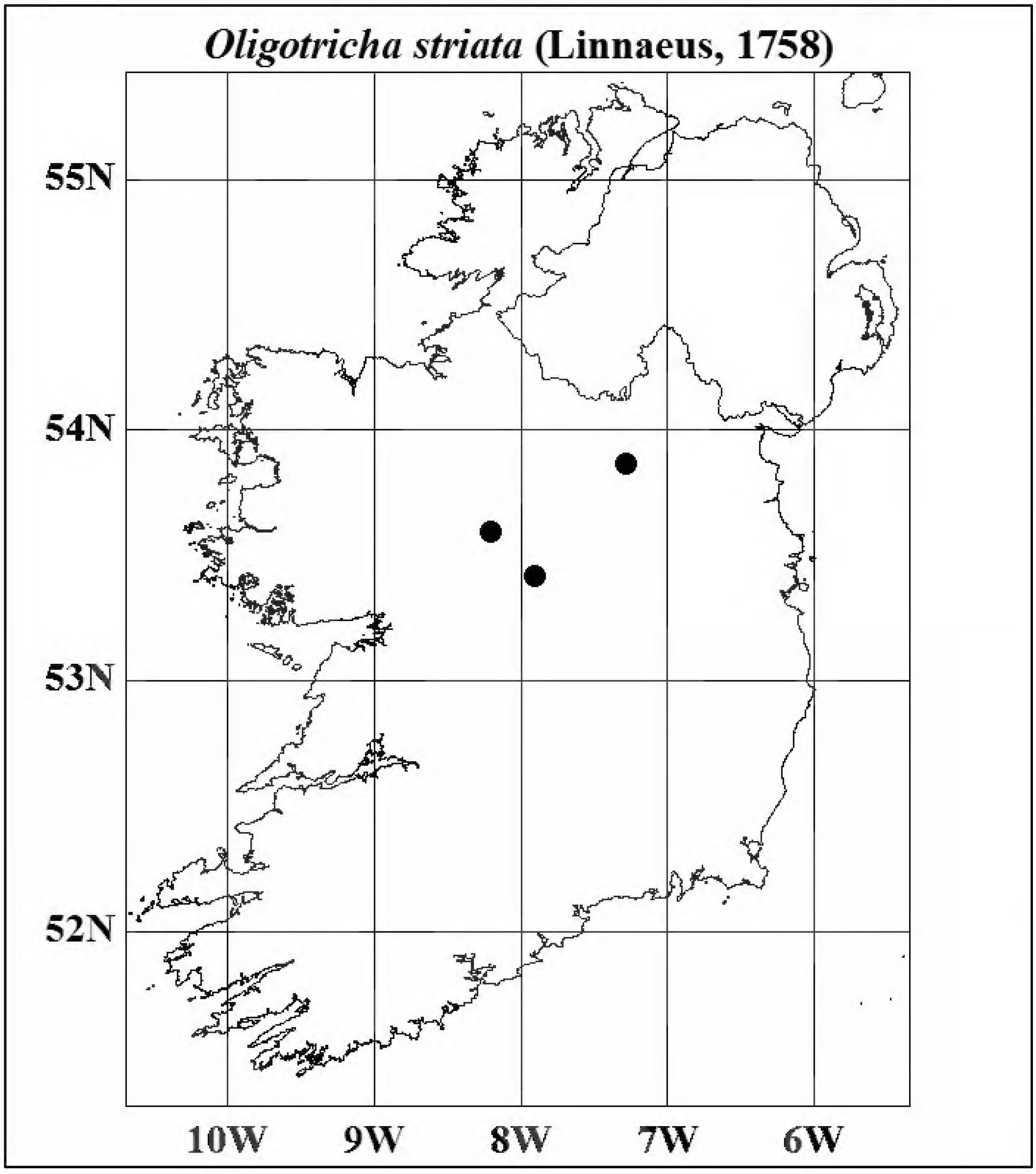


FIGURE 424. Known Irish distribution of *Phryganea bipunctata* Retzius, 1783.

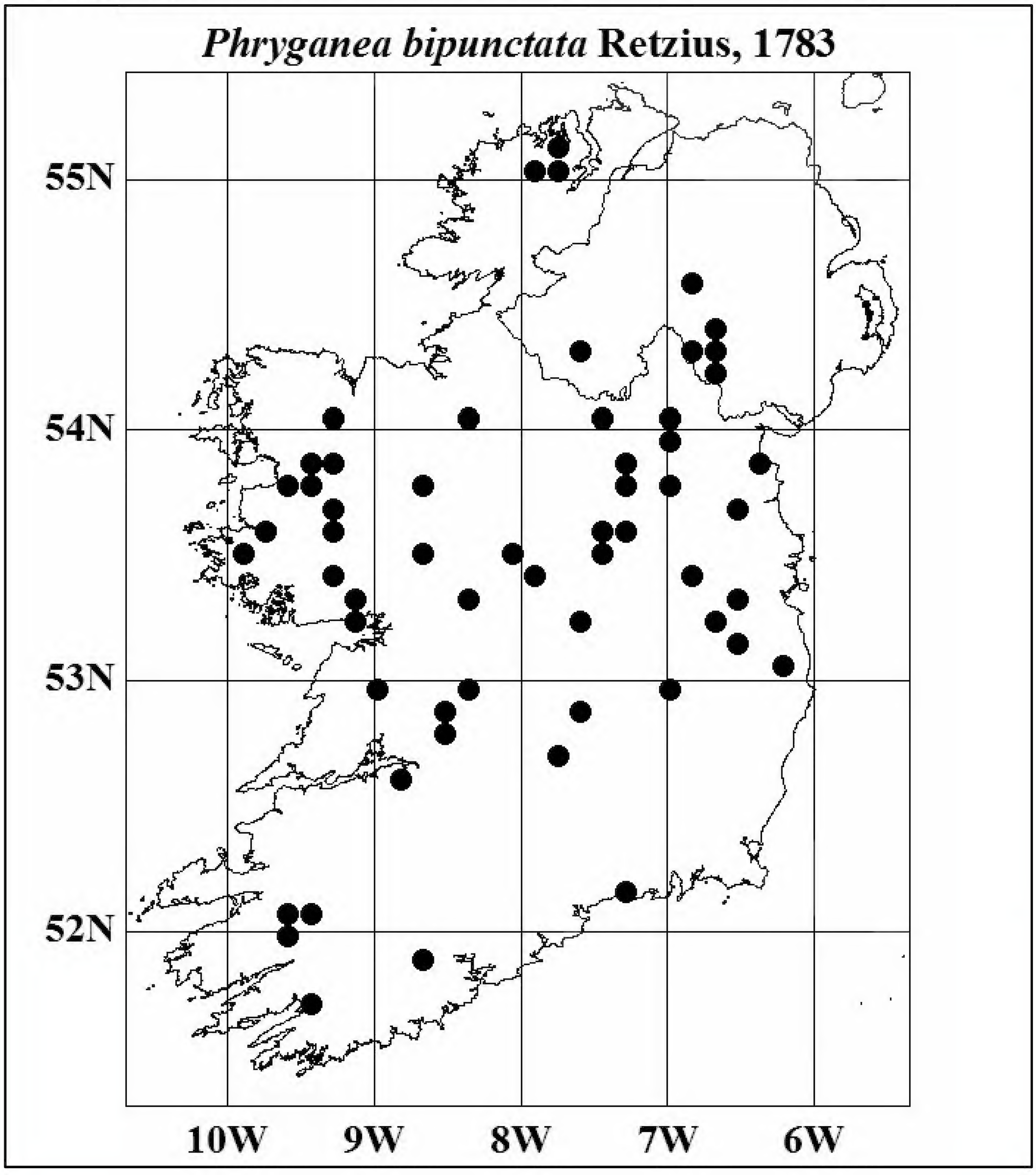


FIGURE 425. Known Irish distribution of *Phryganea grandis* Linnaeus, 1758.

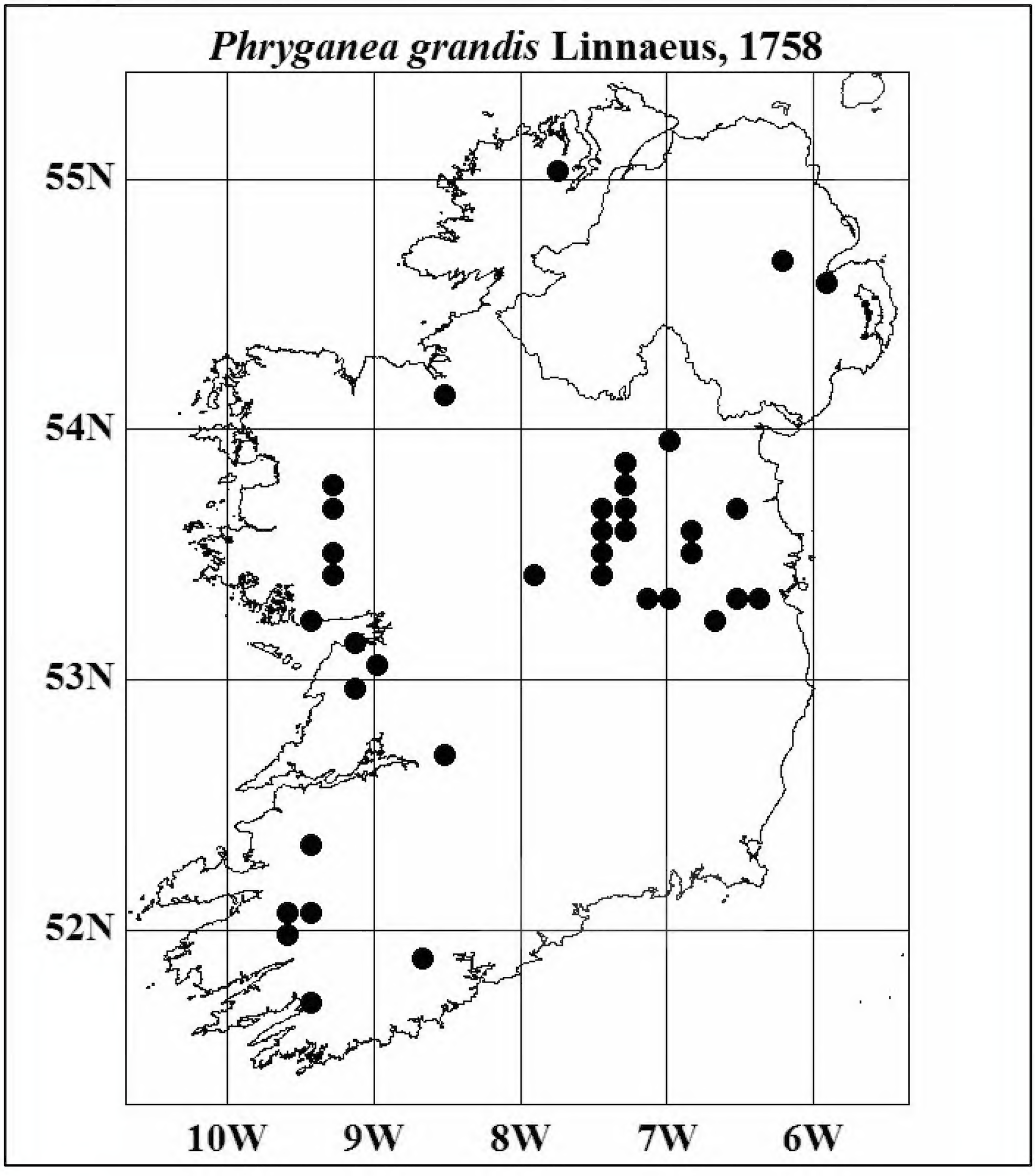


FIGURE 426. Known Irish distribution of *Goera pilosa* (Fabricius, 1775).

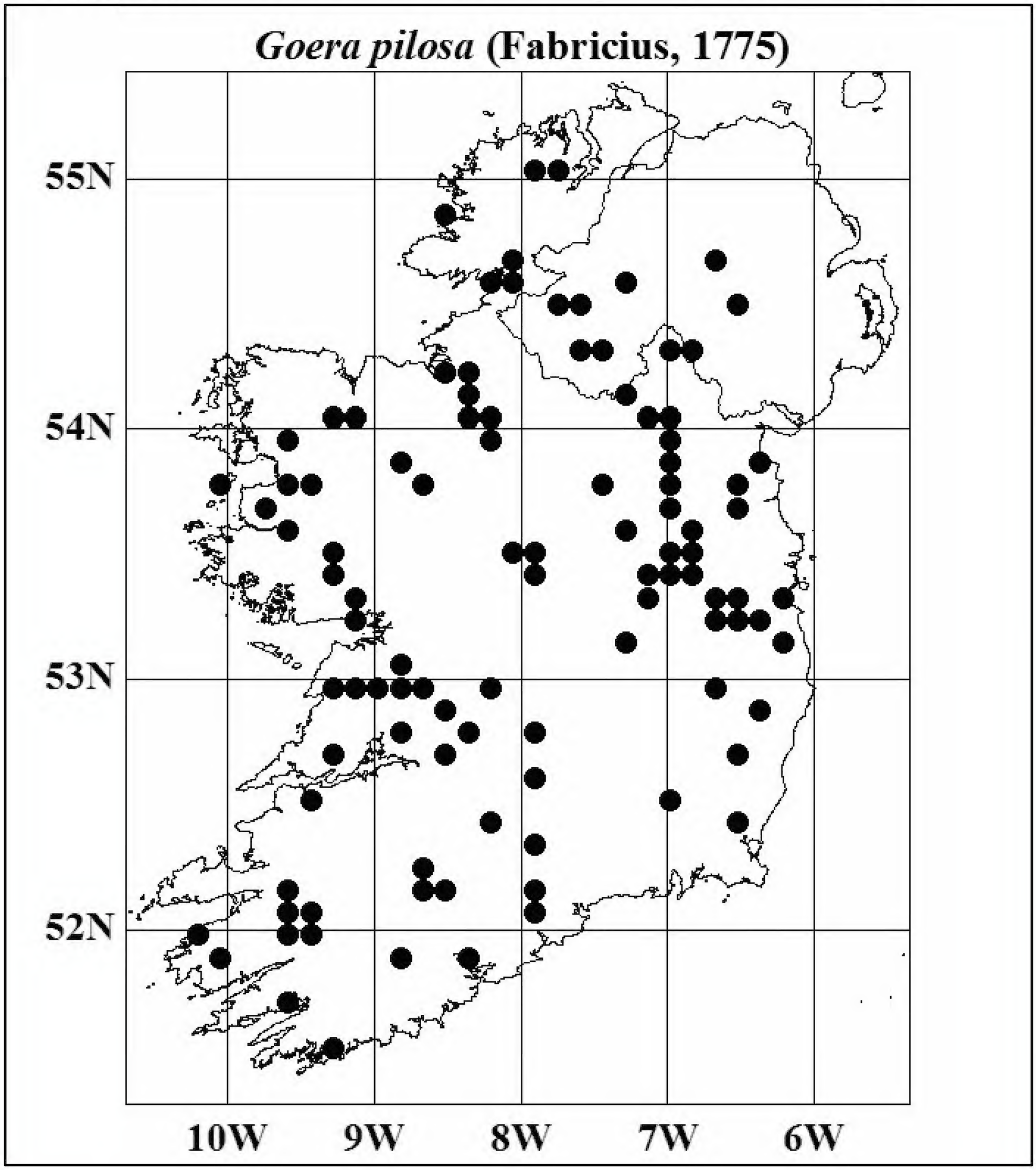


FIGURE 427. Known Irish distribution of *Silo nigricornis* (Pictet, 1834).

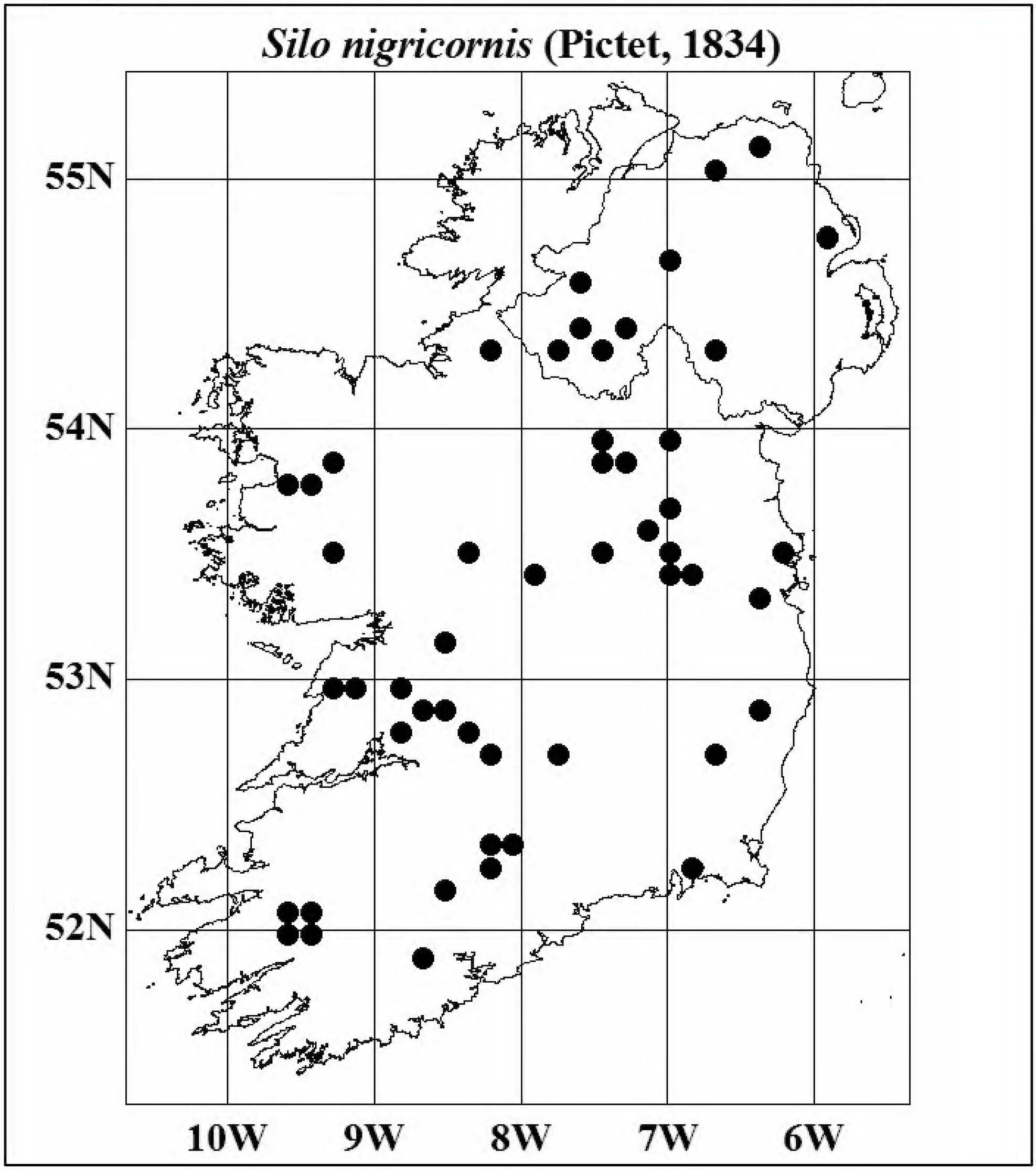


FIGURE 428. Known Irish distribution of *Silo pallipes* (Fabricius, 1781).

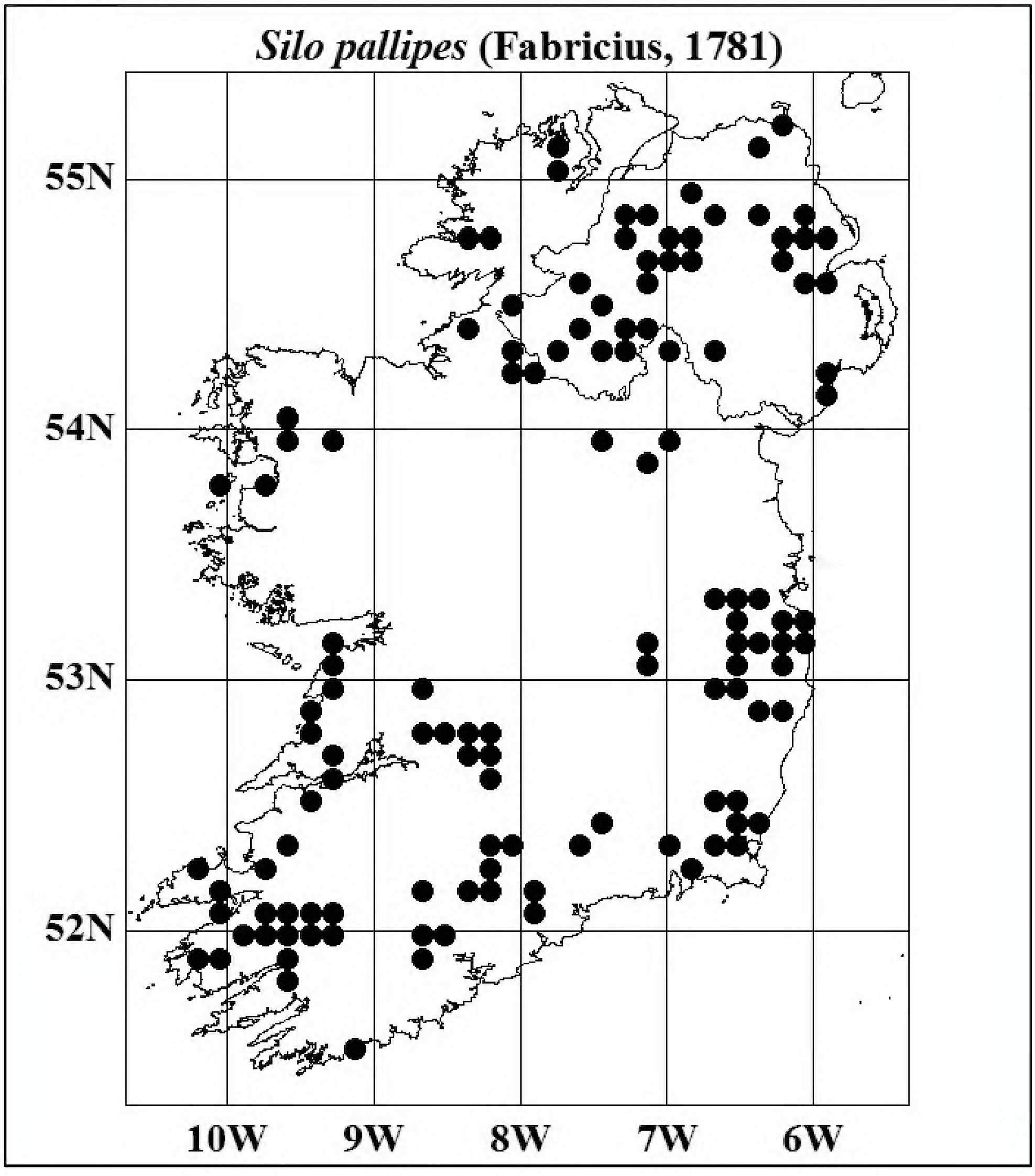


FIGURE 429. Known Irish distribution of *Crunoecia irrorata* (Curtis, 1834).

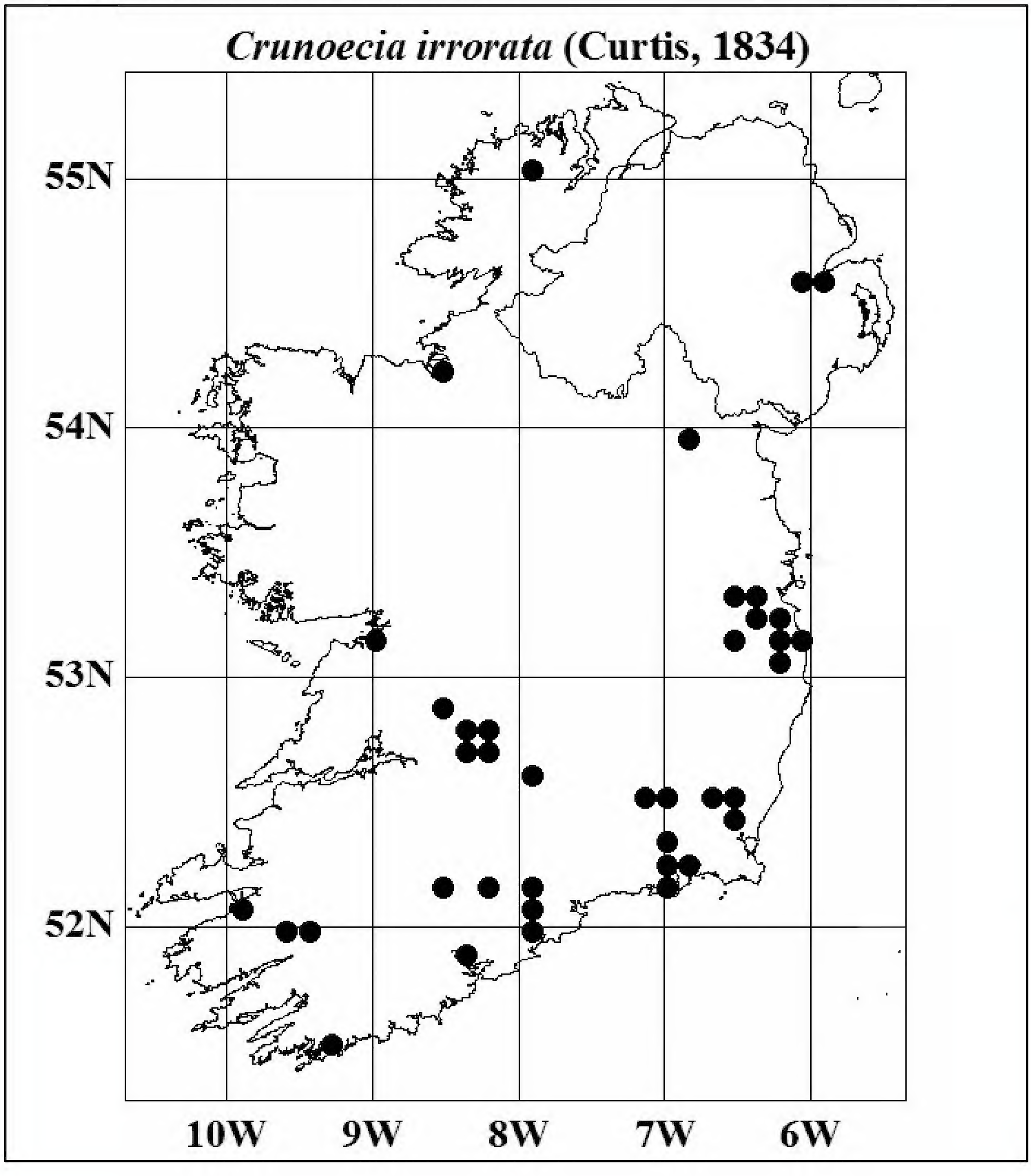


FIGURE 430. Known Irish distribution of *Lepidostoma basale* (Kolenati, 1848).

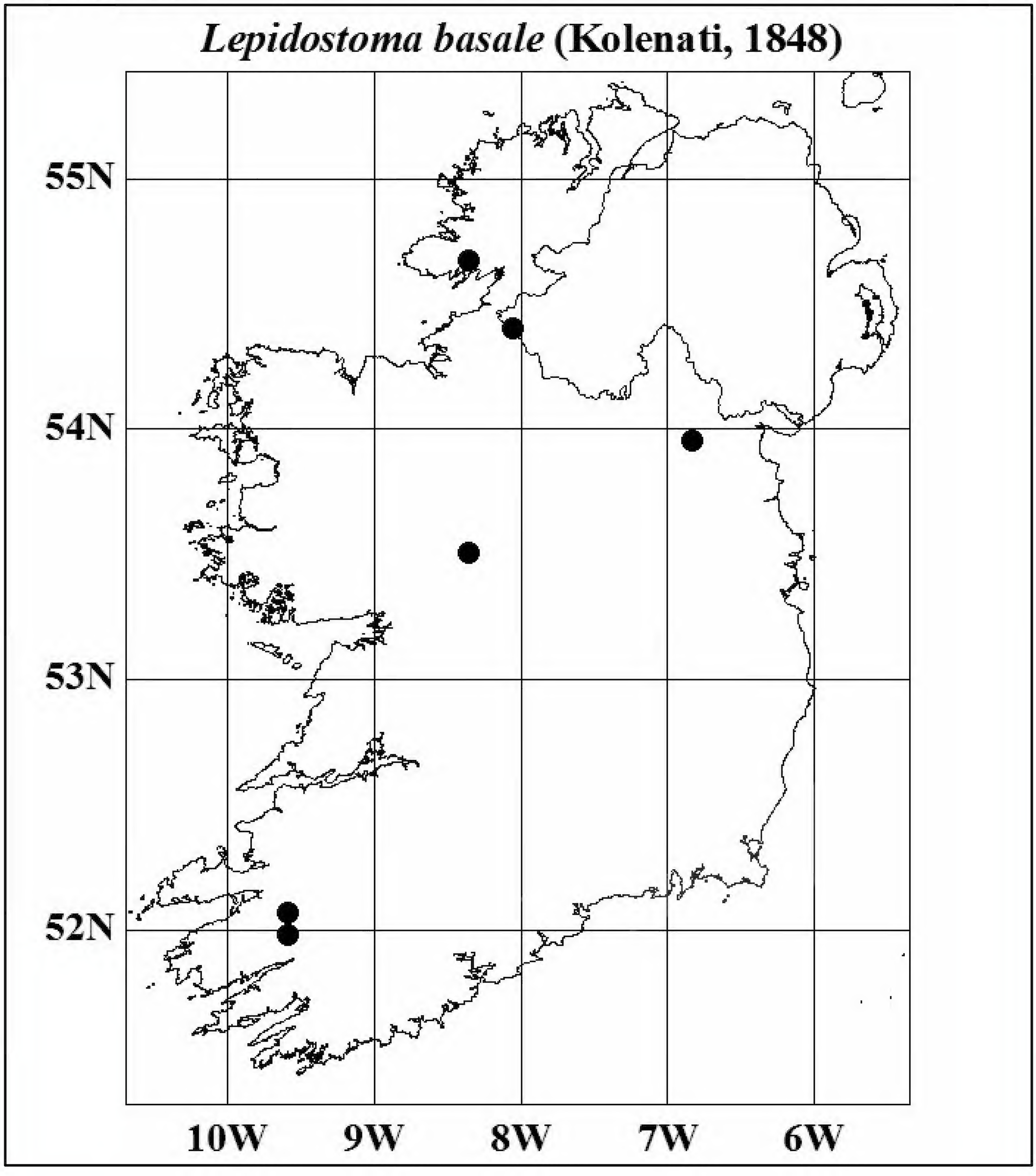


FIGURE 431. Known Irish distribution of *Lepidostoma hirtum* (Fabricius, 1775).

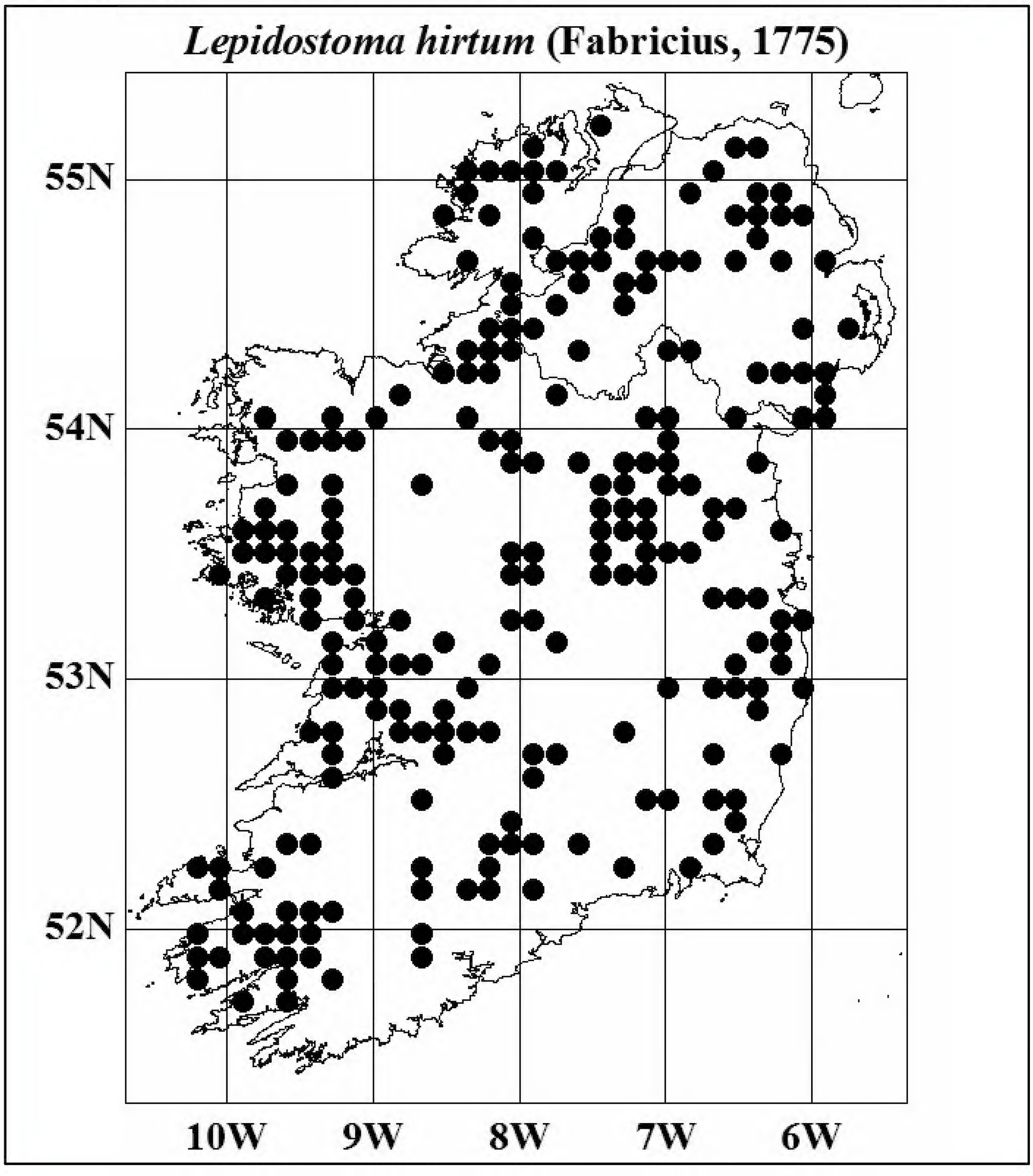


FIGURE 432. Known Irish distribution of *Apatania auricula* (Forsslund, 1930).

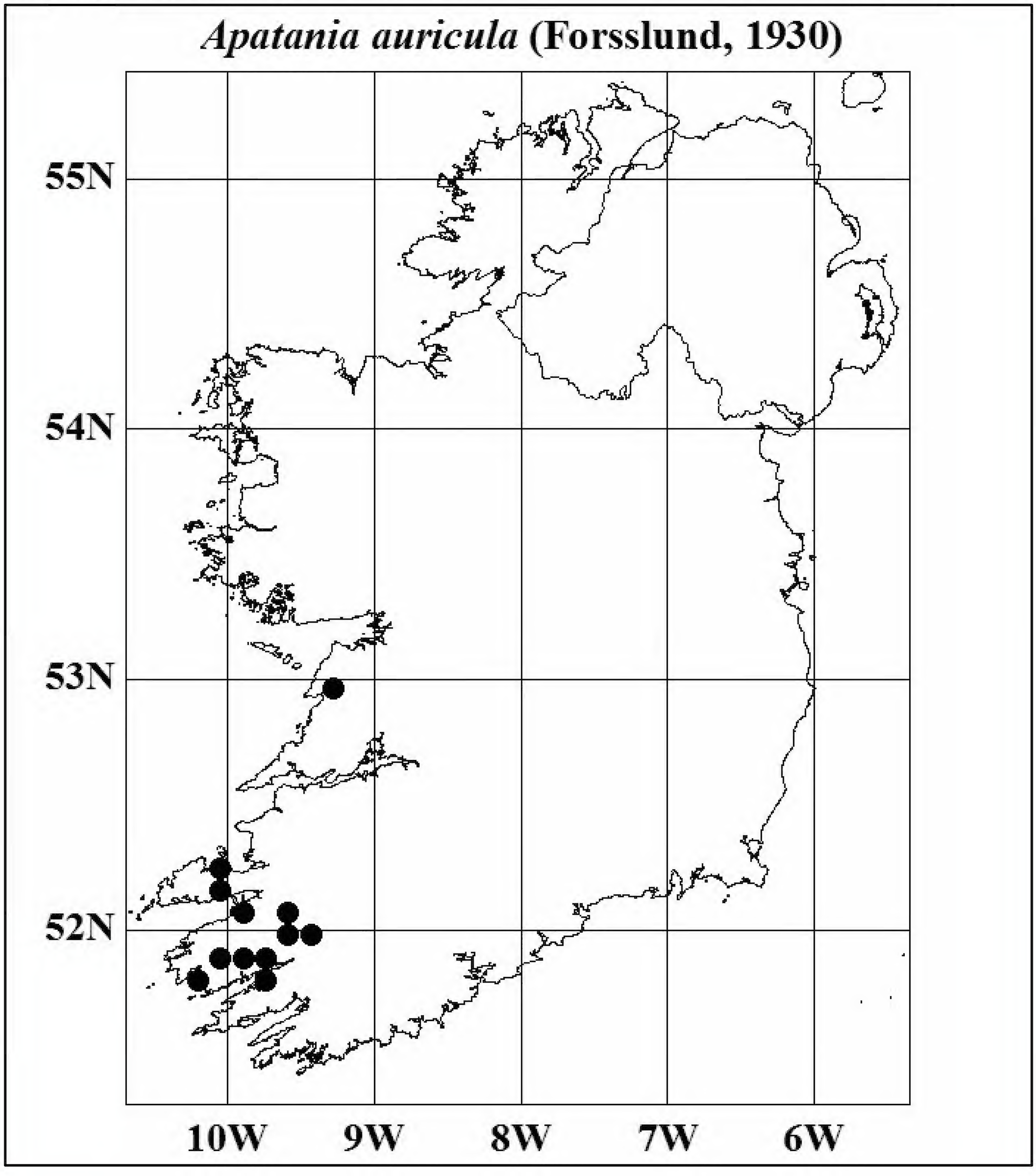


FIGURE 433. Known Irish distribution of *Apatania muliebris* McLachlan, 1866.

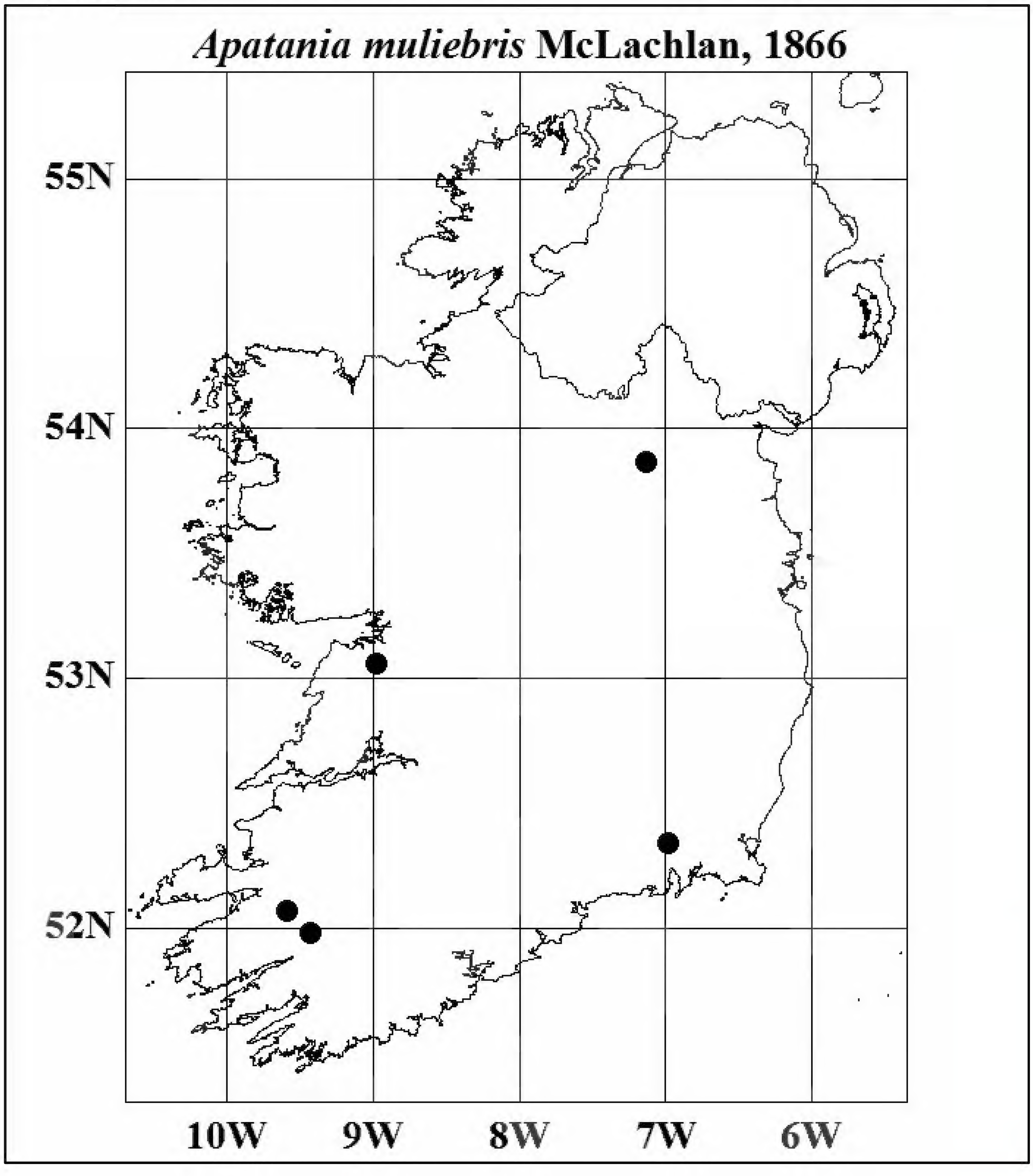


FIGURE 434. Known Irish distribution of *Apatania wallengreni* McLachlan, 1871.

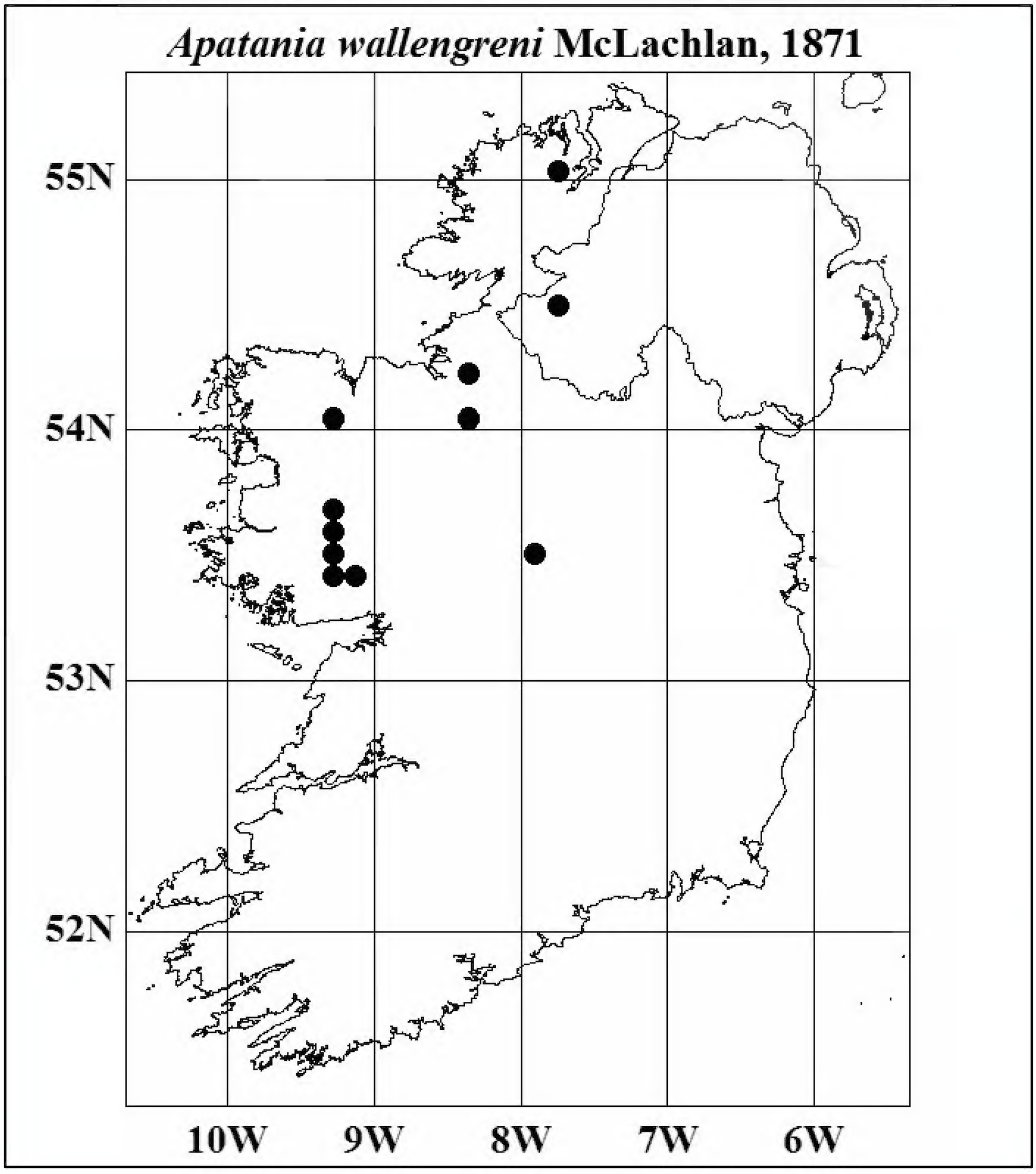


FIGURE 435. Known Irish distribution of *Drusus annulatus* (Stephens, 1837).

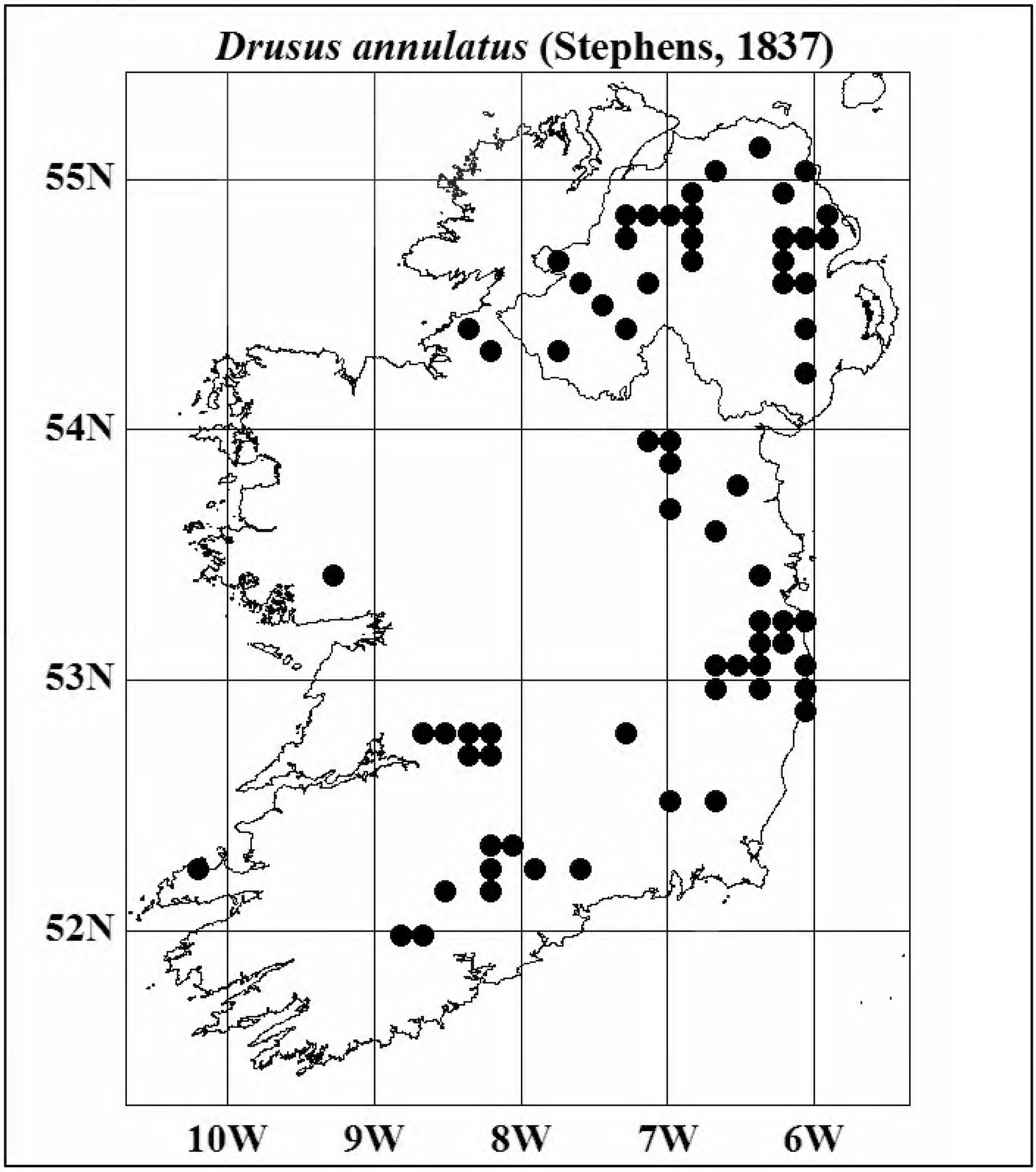


FIGURE 436. Known Irish distribution of *Ecclisopteryx dalecarlica* Kolenati, 1848.

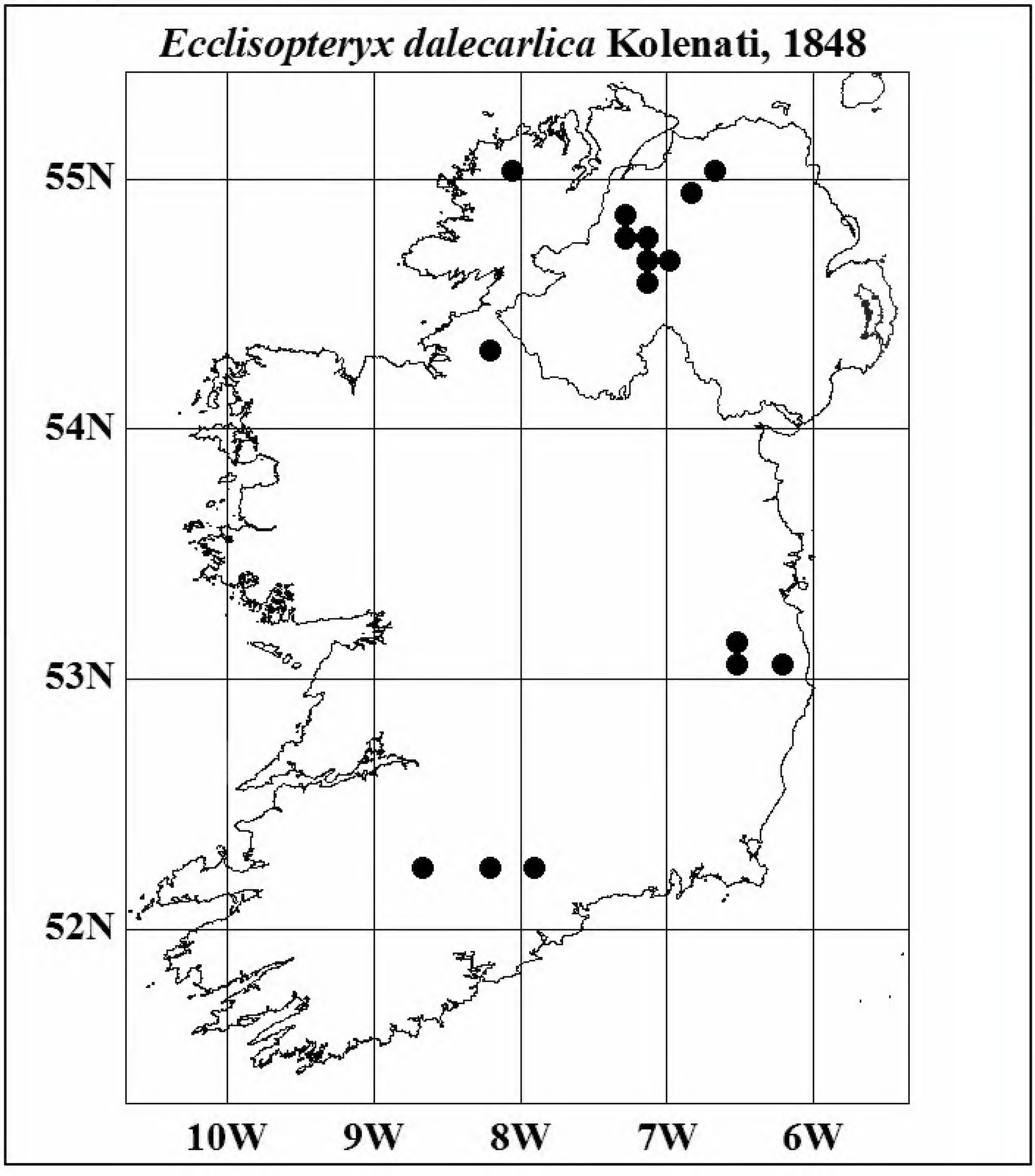


FIGURE 437. Known Irish distribution of *Chaetopteryx villosa* (Fabricius, 1798).

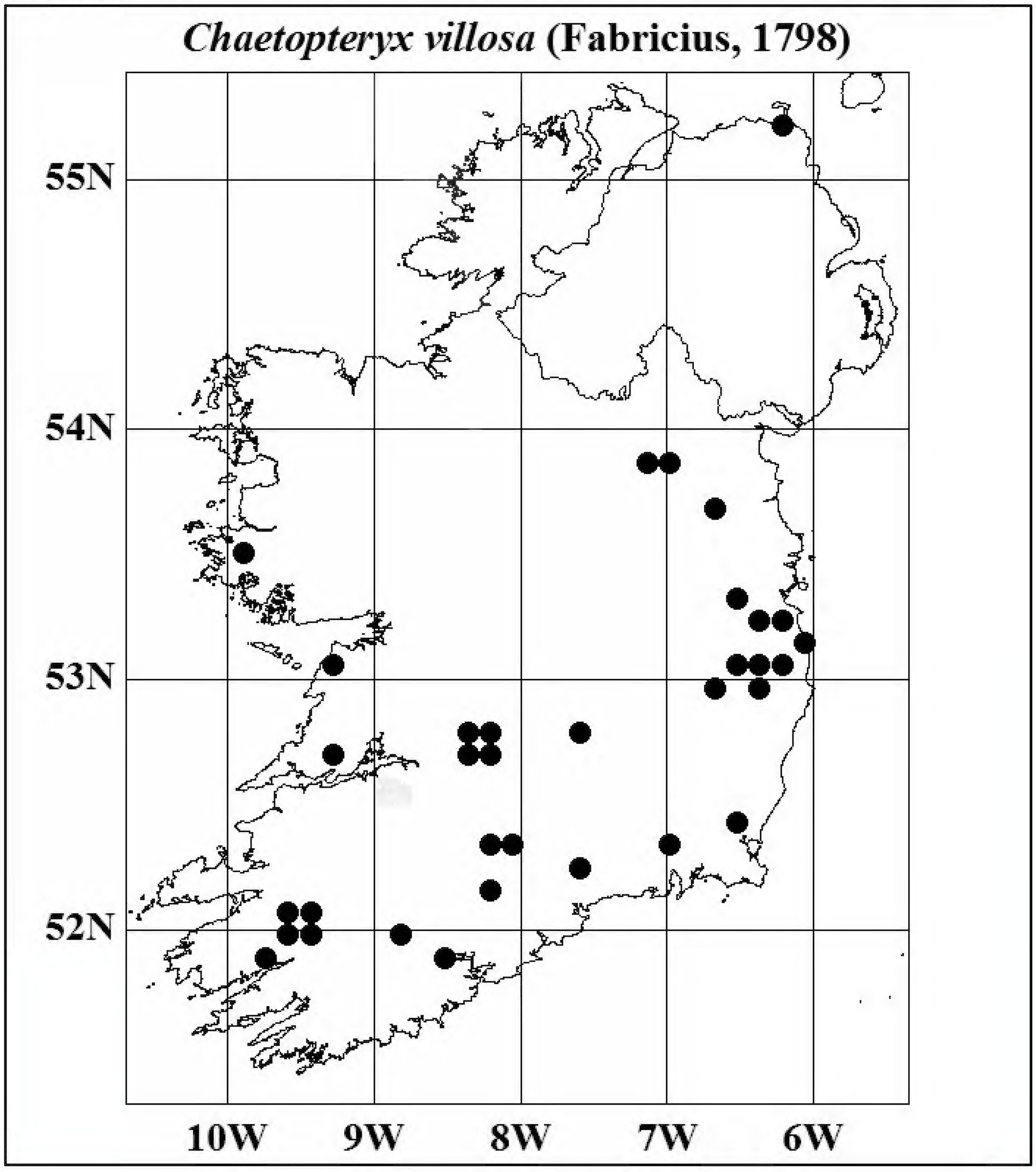


FIGURE 438. Known Irish distribution of *Anabolia brevipennis* (Curtis, 1834).

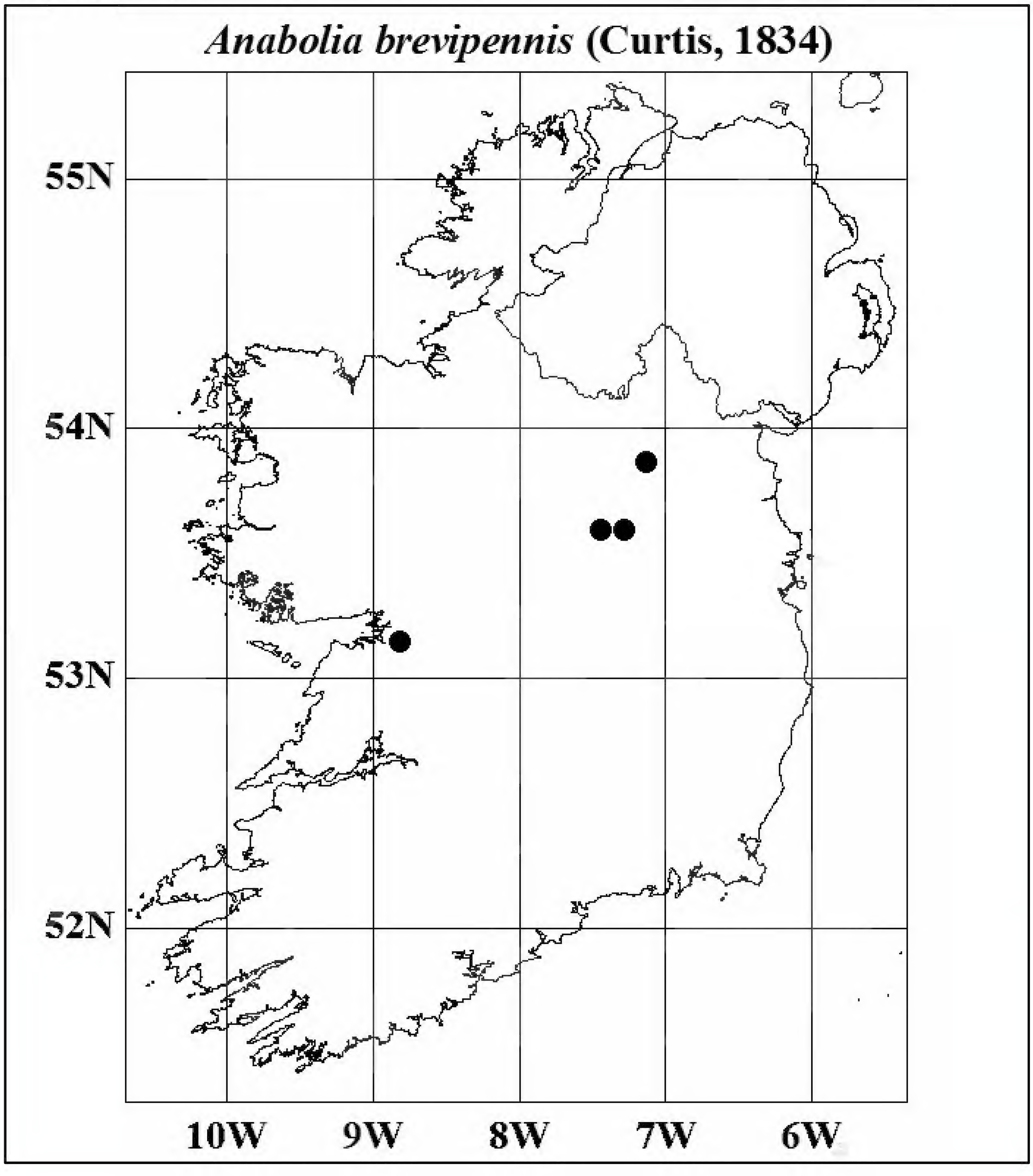


FIGURE 439. Known Irish distribution of *Anabolia nervosa* (Curtis, 1834).

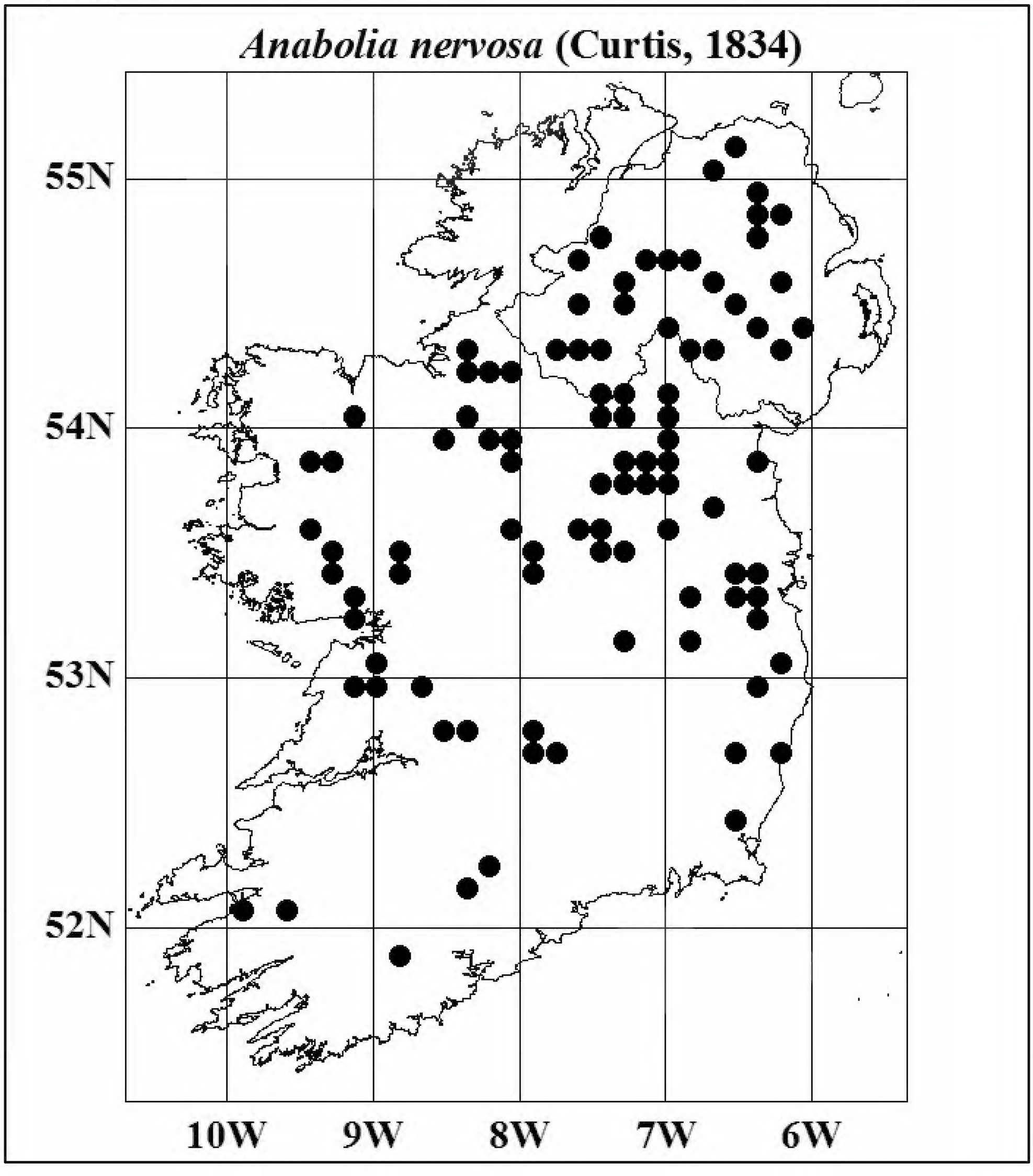


FIGURE 440. Known Irish distribution of *Glyphotaelius pellucidus* (Retzius, 1783).

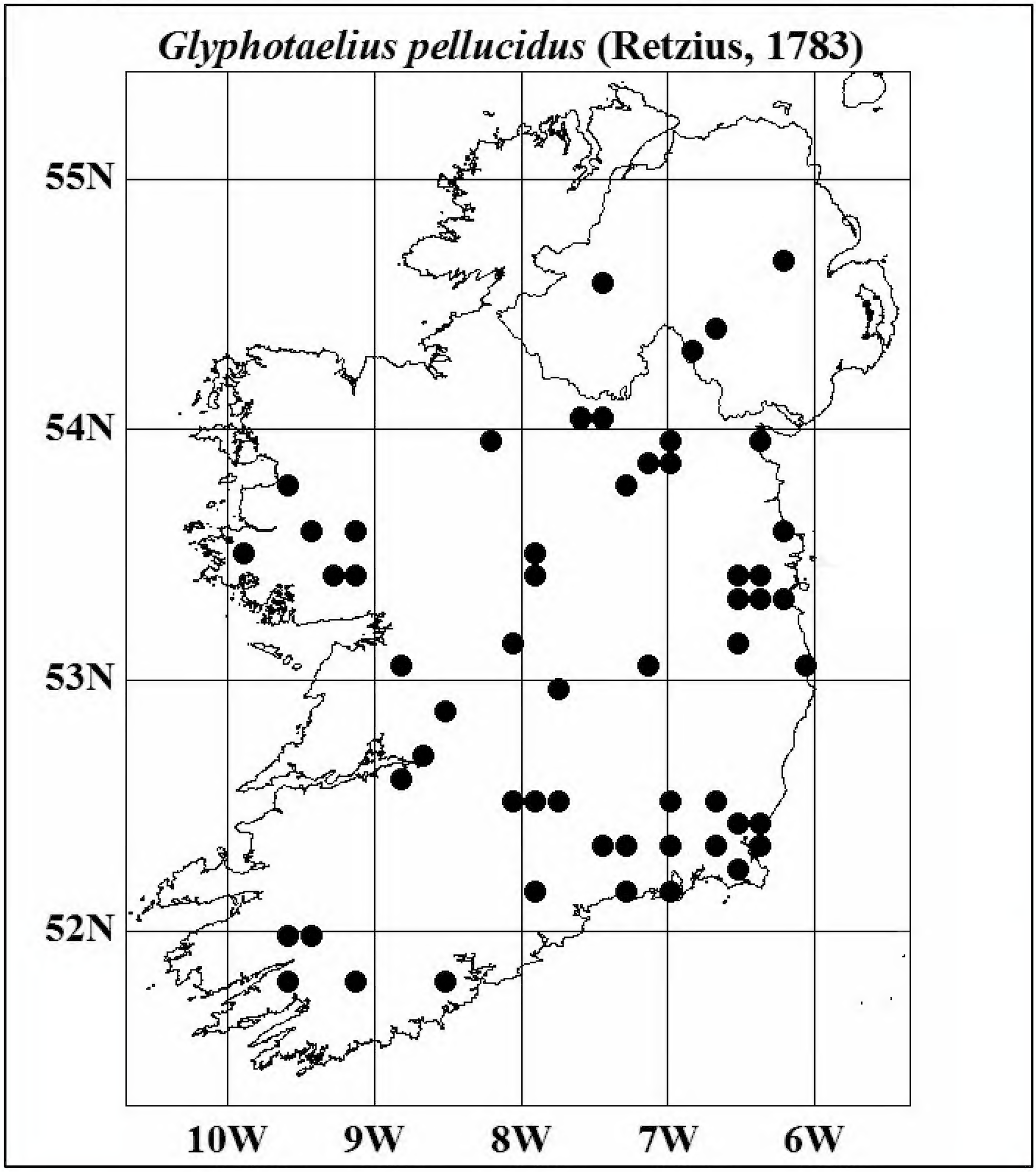


FIGURE 441. Known Irish distribution of *Grammotaulius nigropunctatus* (Retzius, 1783).

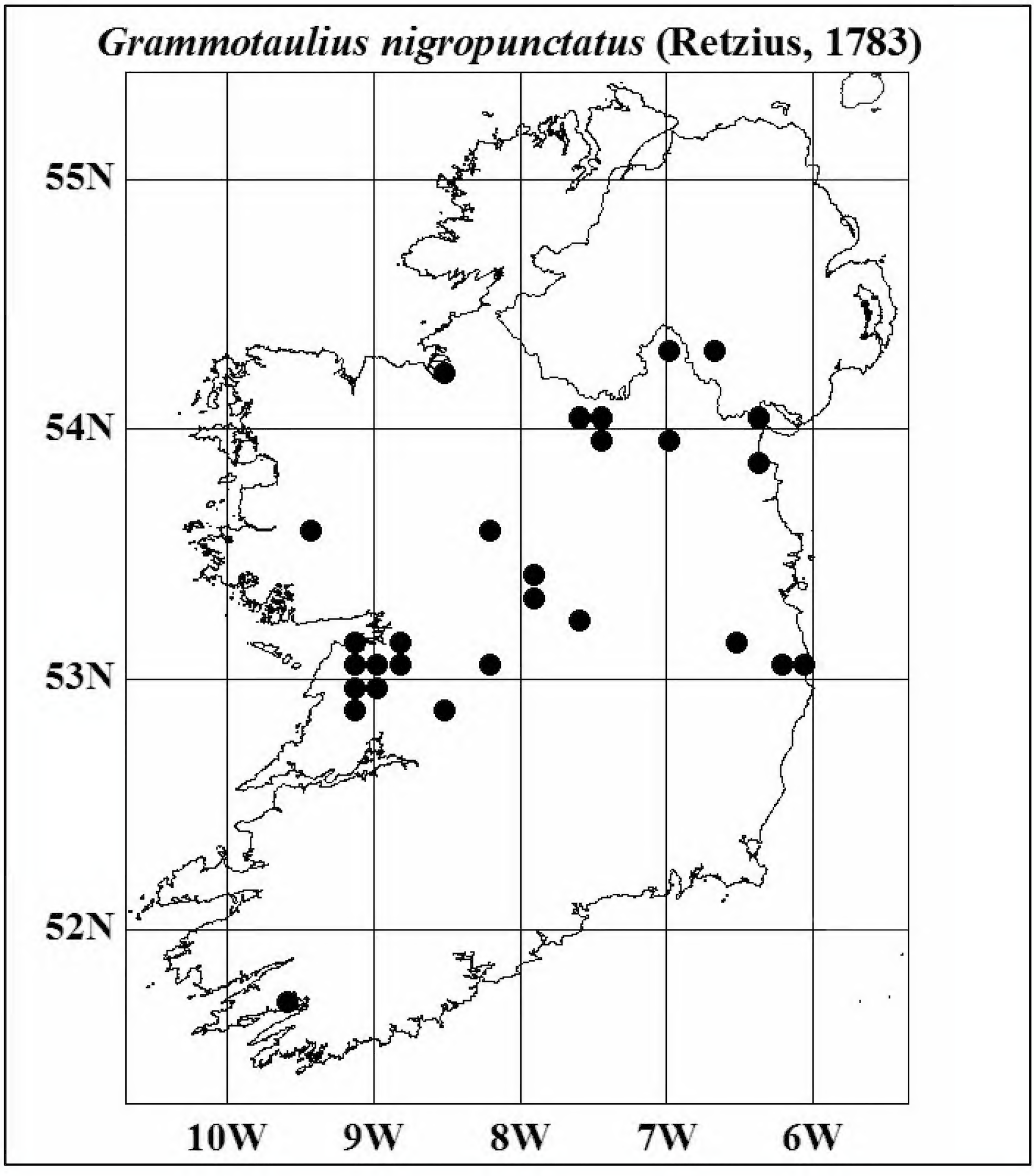


FIGURE 442. Known Irish distribution of *Limnephilus affinis* Curtis, 1834.

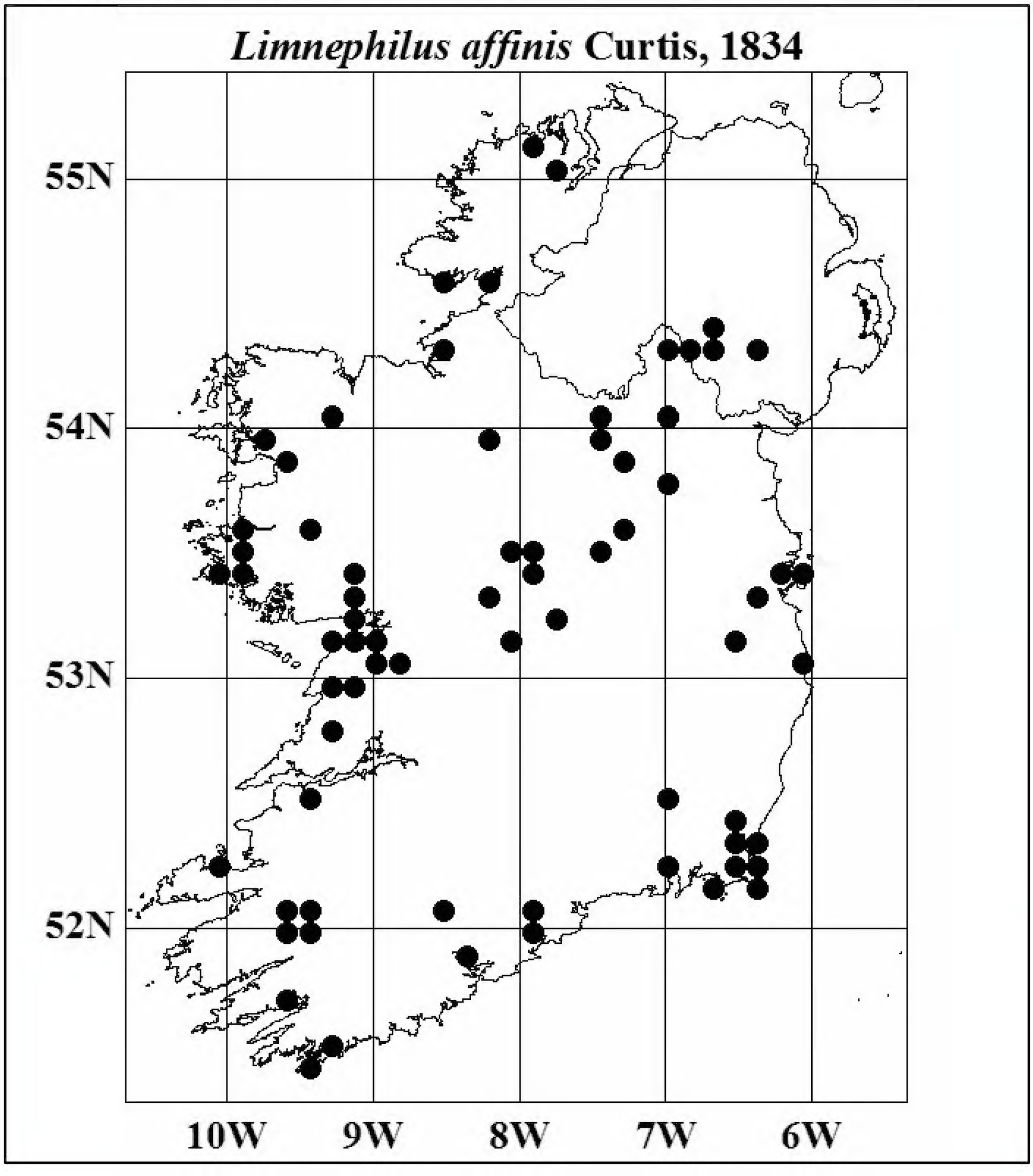


FIGURE 443. Known Irish distribution of *Limnephilus auricula* Curtis, 1834.

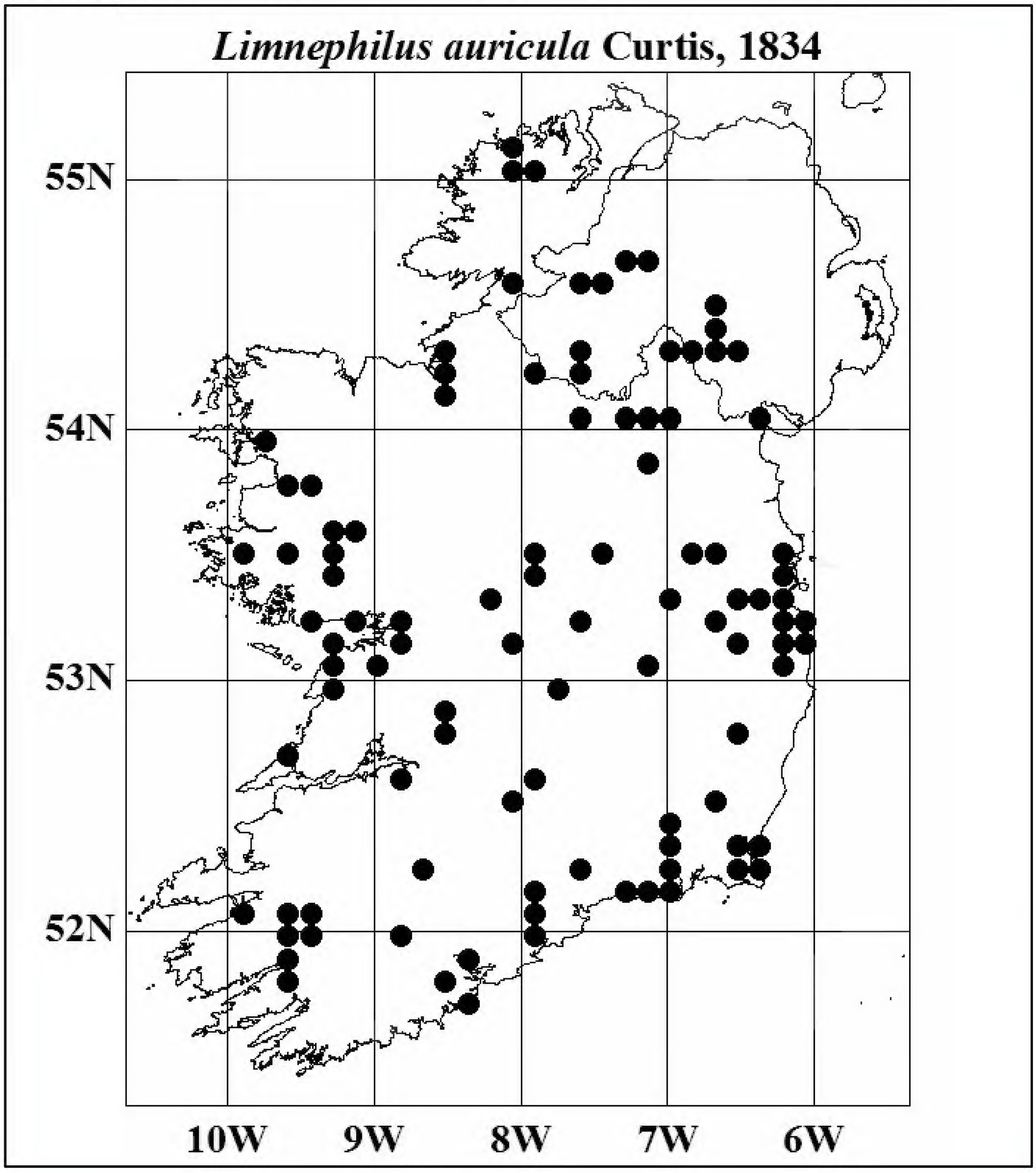


FIGURE 444. Known Irish distribution of *Limnephilus binotatus* Curtis, 1834.

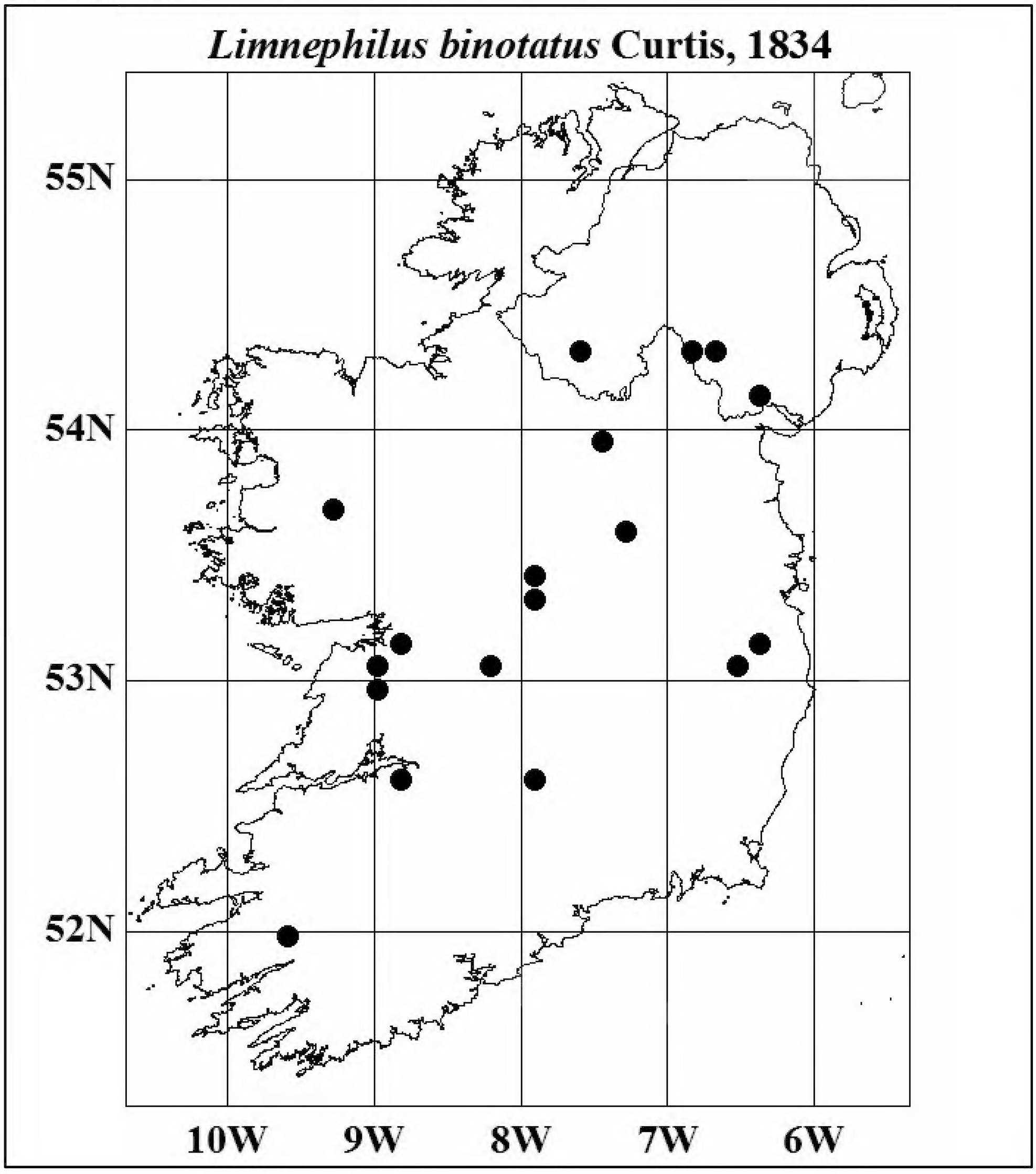


FIGURE 445. Known Irish distribution of *Limnephilus centralis* Curtis, 1834.

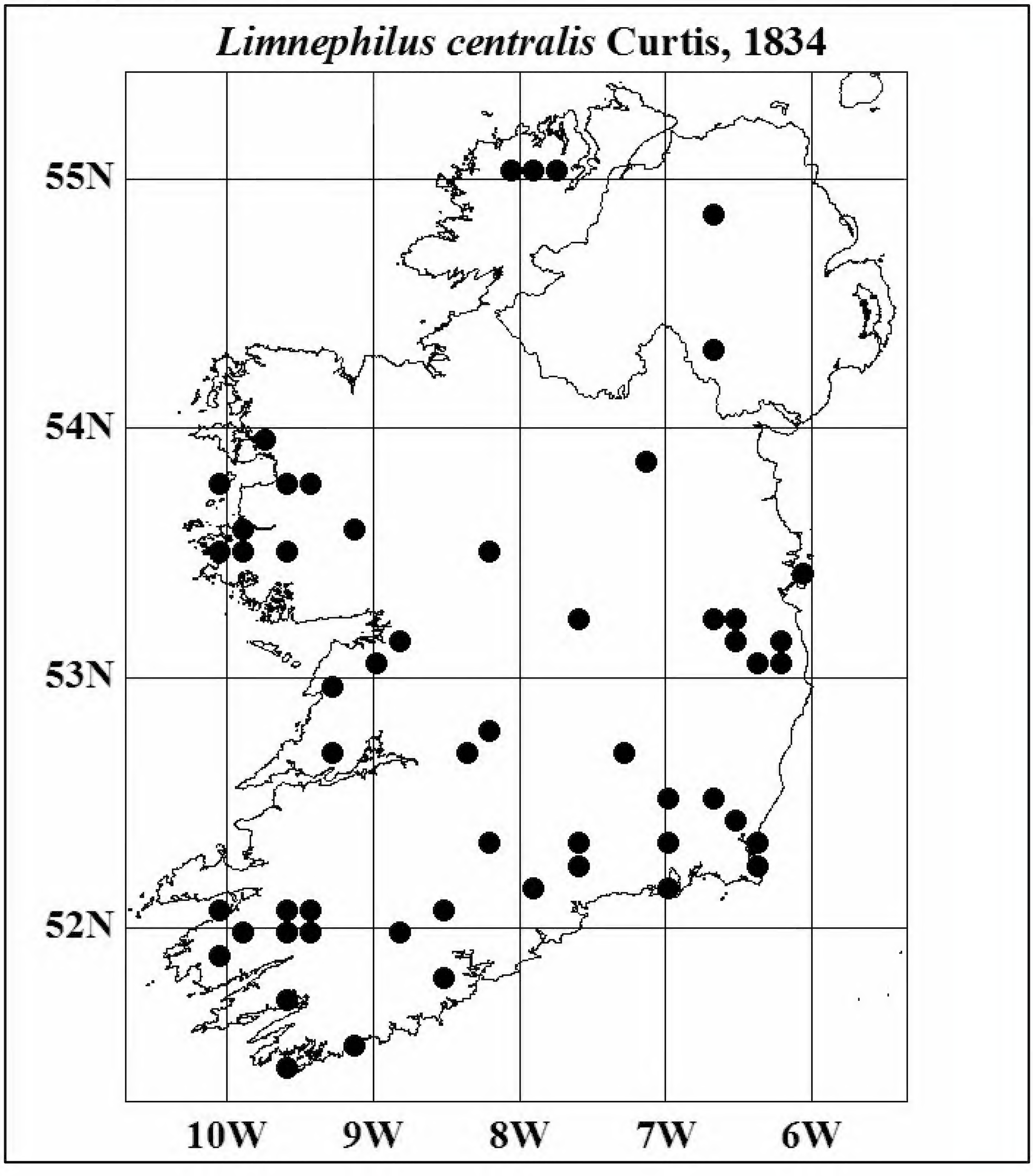


FIGURE 446. Known Irish distribution of *Limnephilus coenosus* Curtis, 1834.

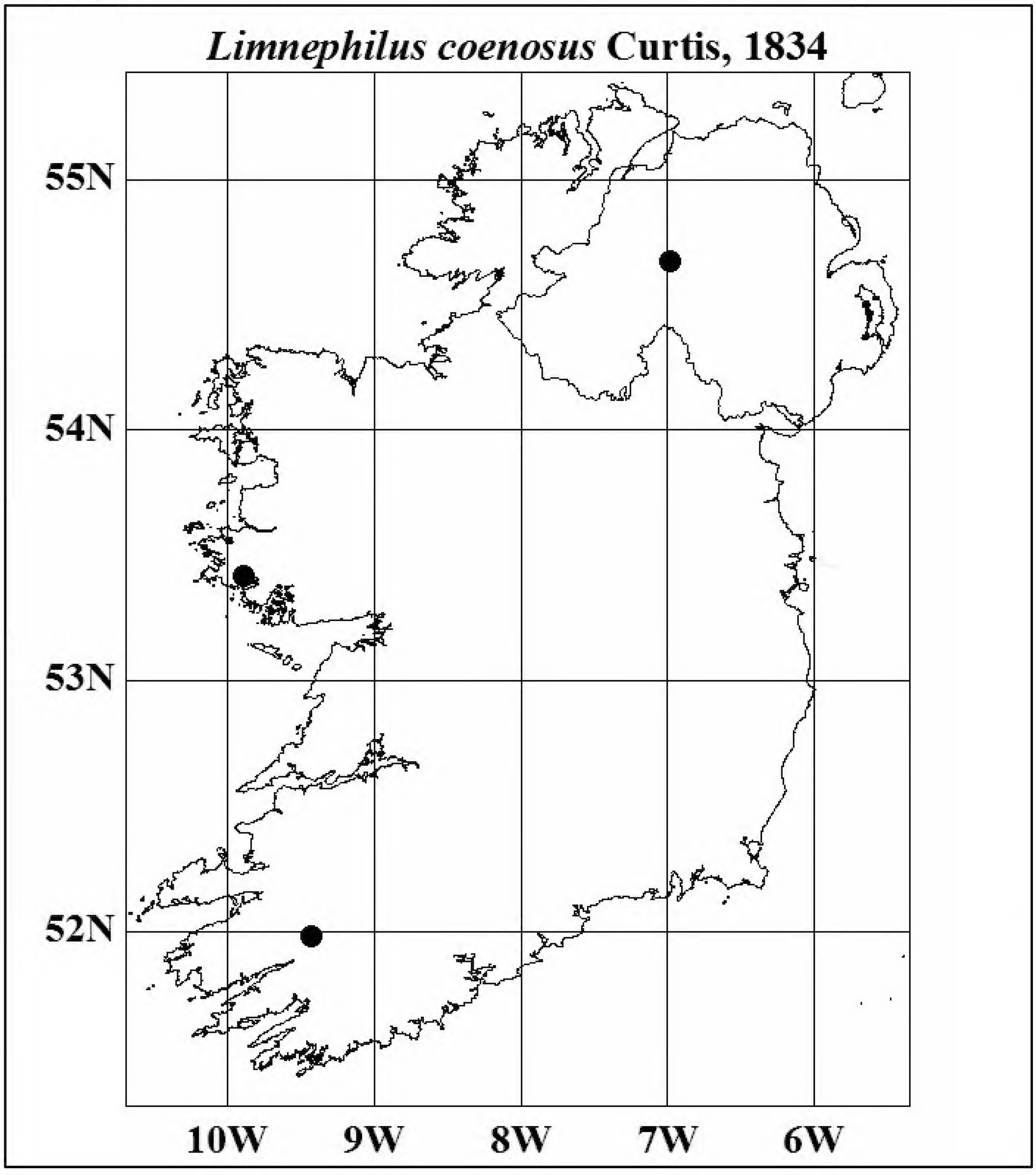


FIGURE 447. Known Irish distribution of *Limnephilus decipiens* (Kolenati, 1848).

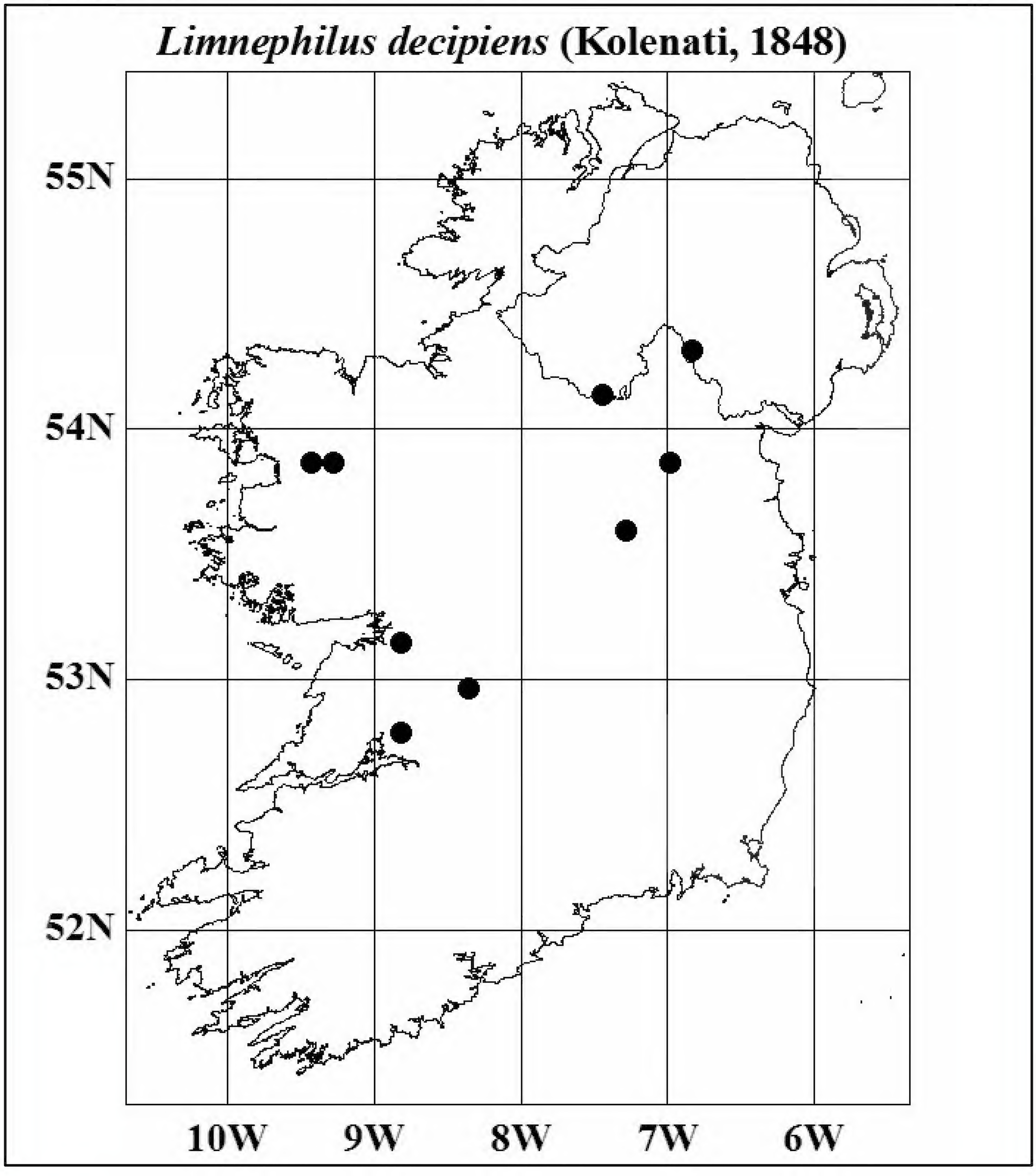


FIGURE 448. Known Irish distribution of *Limnephilus elegans* Curtis, 1834.

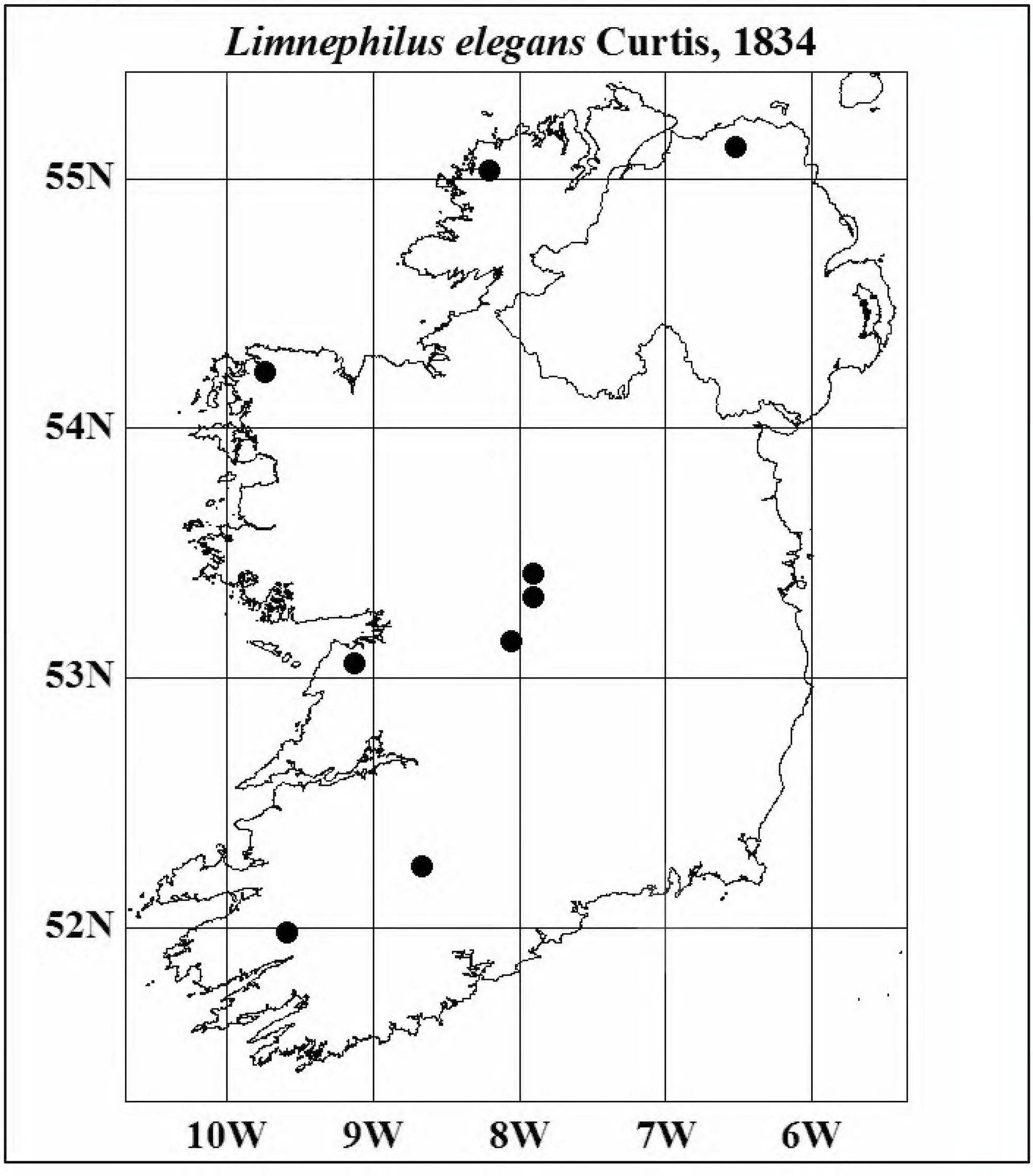


FIGURE 449. Known Irish distribution of *Limnephilus flavicornis* (Fabricius, 1787).

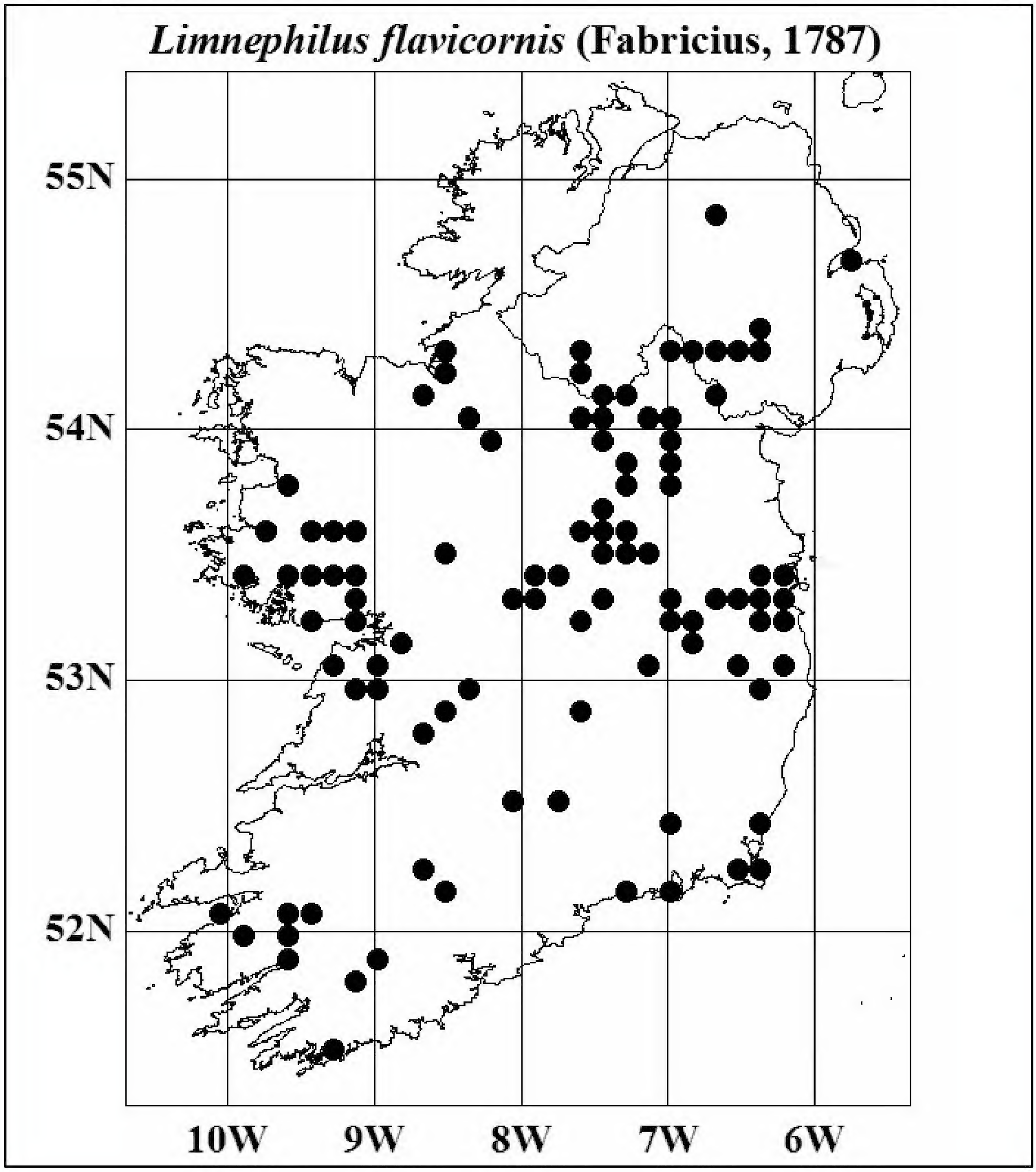


FIGURE 450. Known Irish distribution of *Limnephilus fuscinervis* (Zetterstedt, 1840).

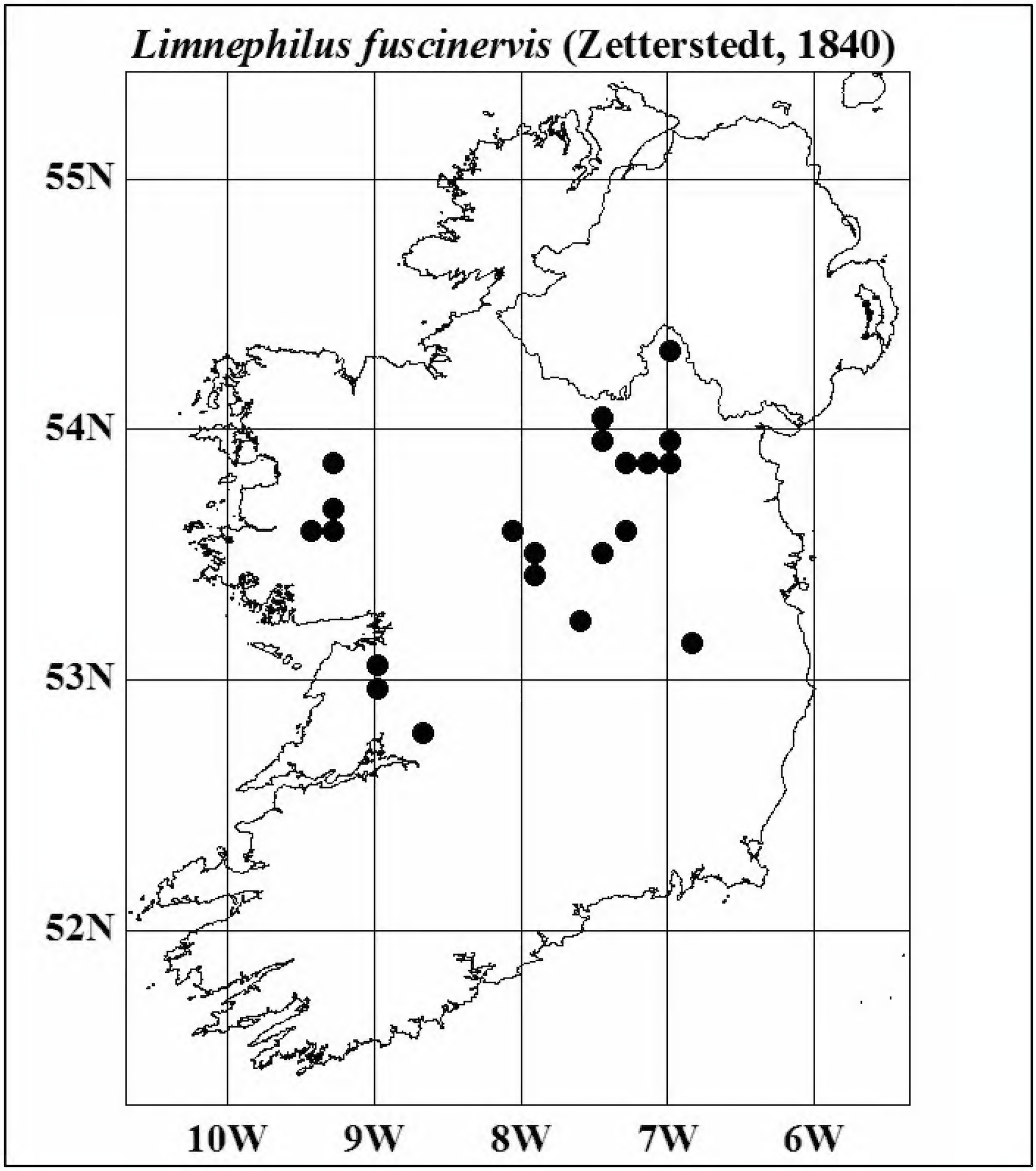


FIGURE 451. Known Irish distribution of *Limnephilus griseus* (Linnaeus, 1758).

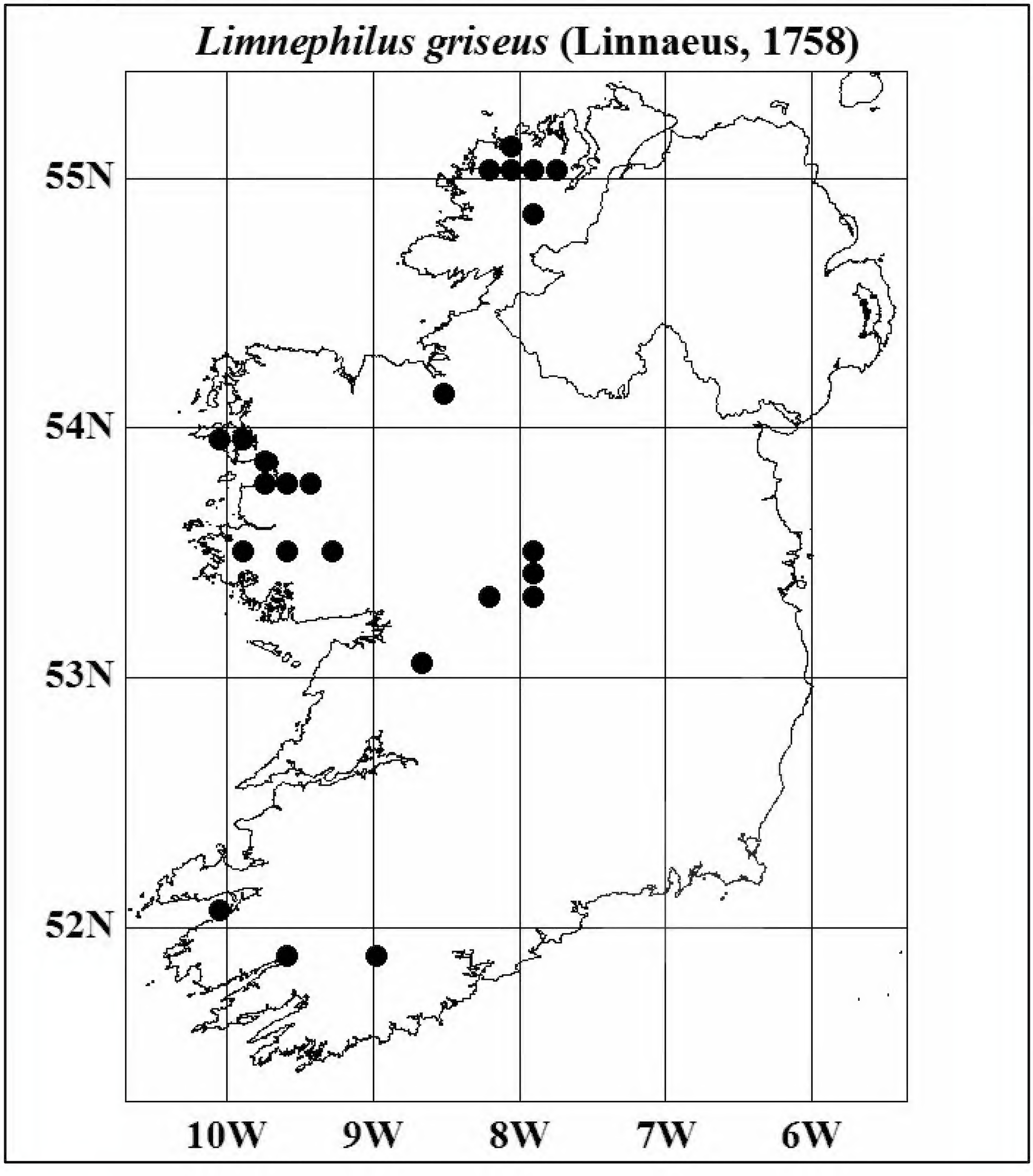


FIGURE 452. Known Irish distribution of *Limnephilus hirsutus* (Pictet, 1834).

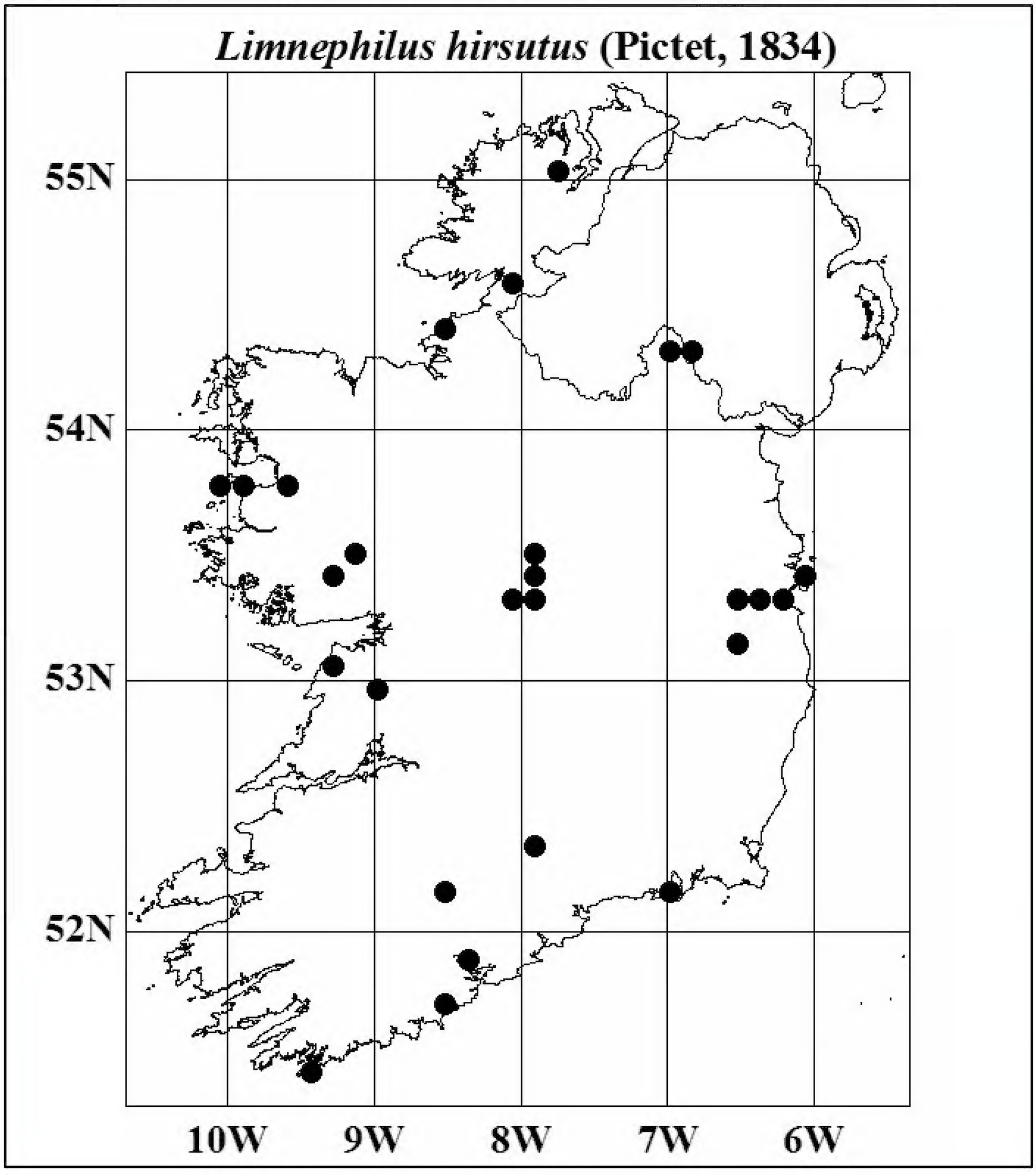


FIGURE 453. Known Irish distribution of *Limnephilus ignavus* Mclachlan, 1865.

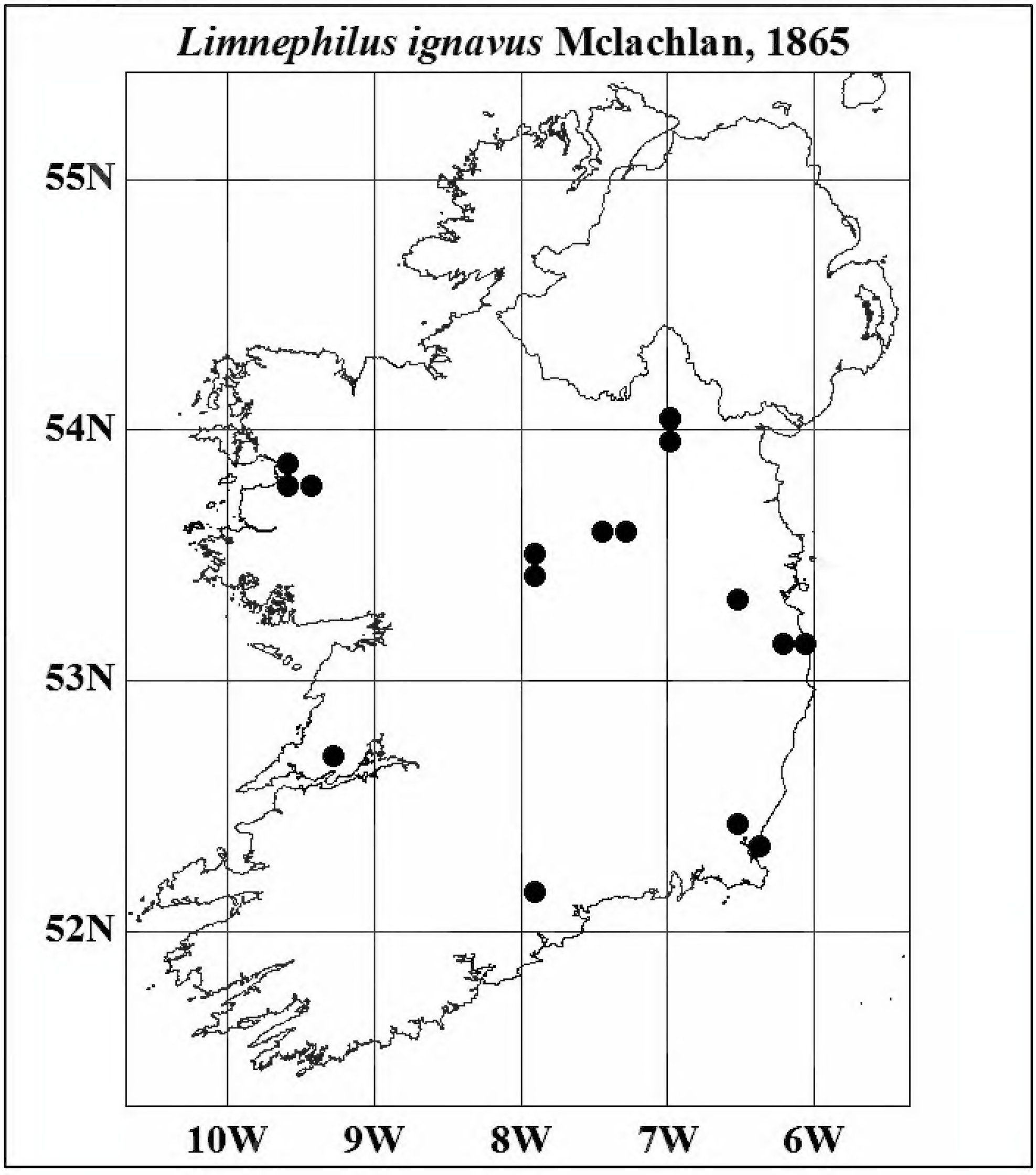


FIGURE 454. Known Irish distribution of *Limnephilus incisus* Curtis, 1834.

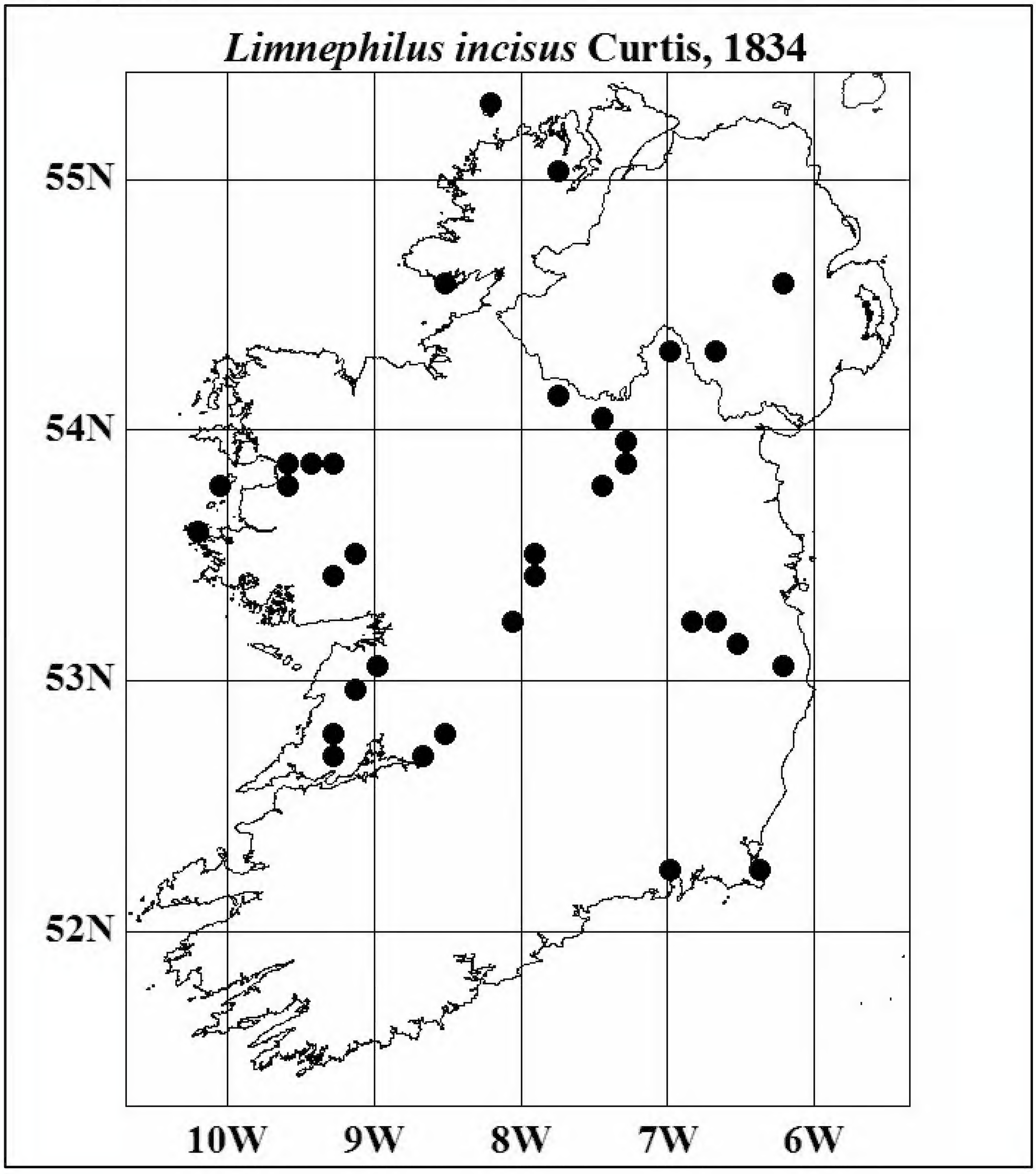


FIGURE 455. Known Irish distribution of *Limnephilus lunatus* Curtis, 1834.

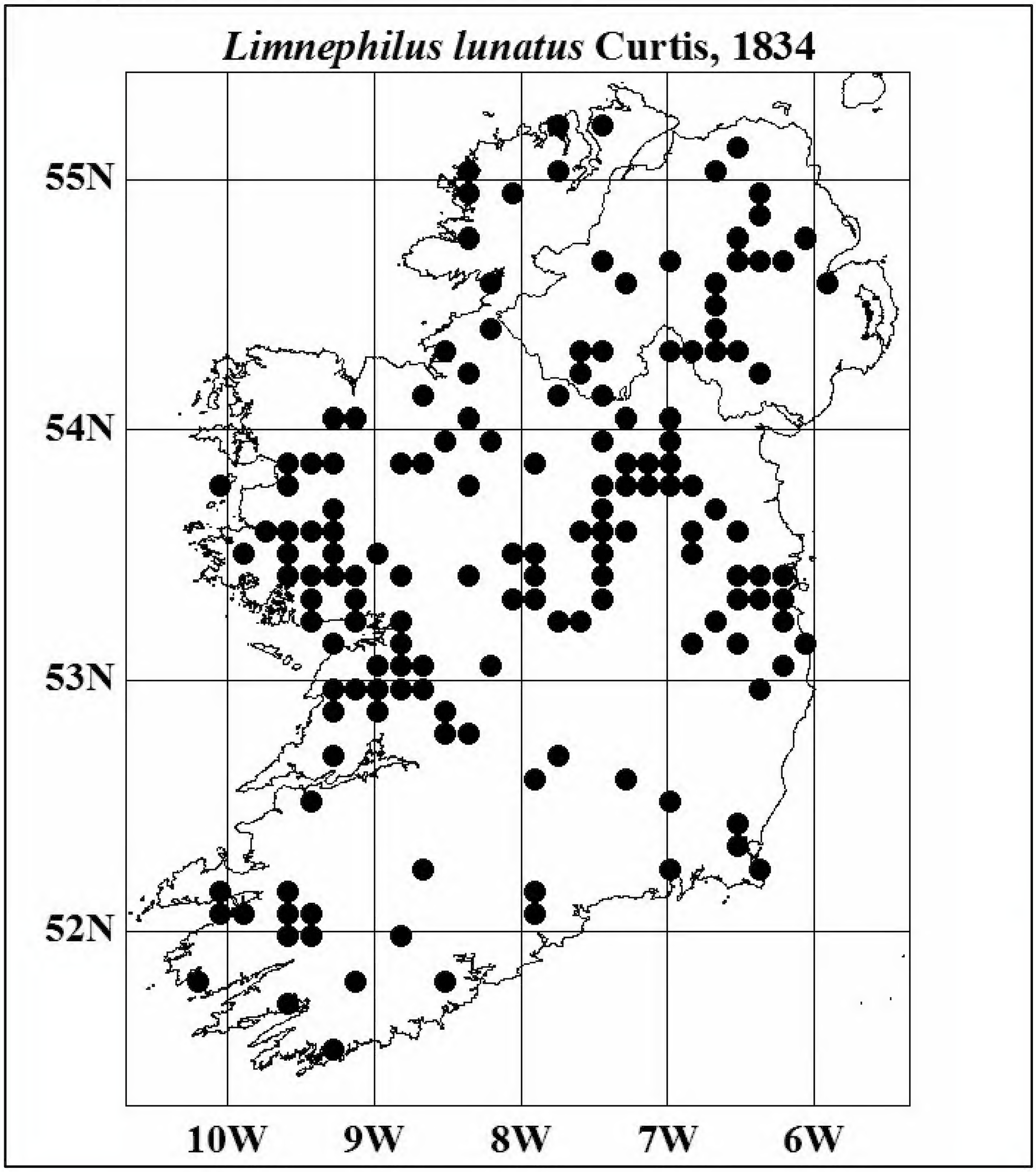


FIGURE 456. Known Irish distribution of *Limnephilus luridus* Curtis, 1834.

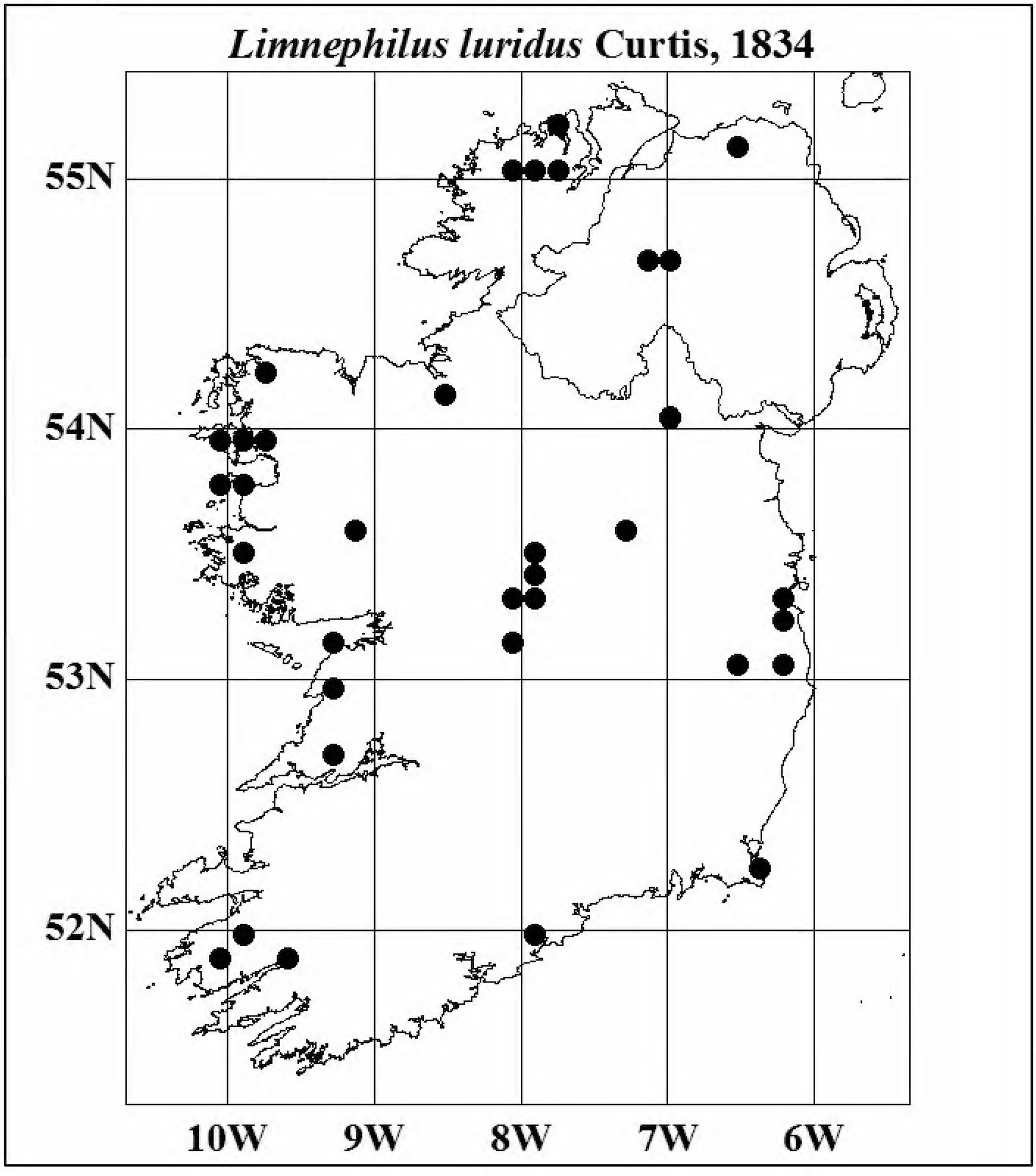


FIGURE 457. Known Irish distribution of *Limnephilus marmoratus* Curtis, 1834.

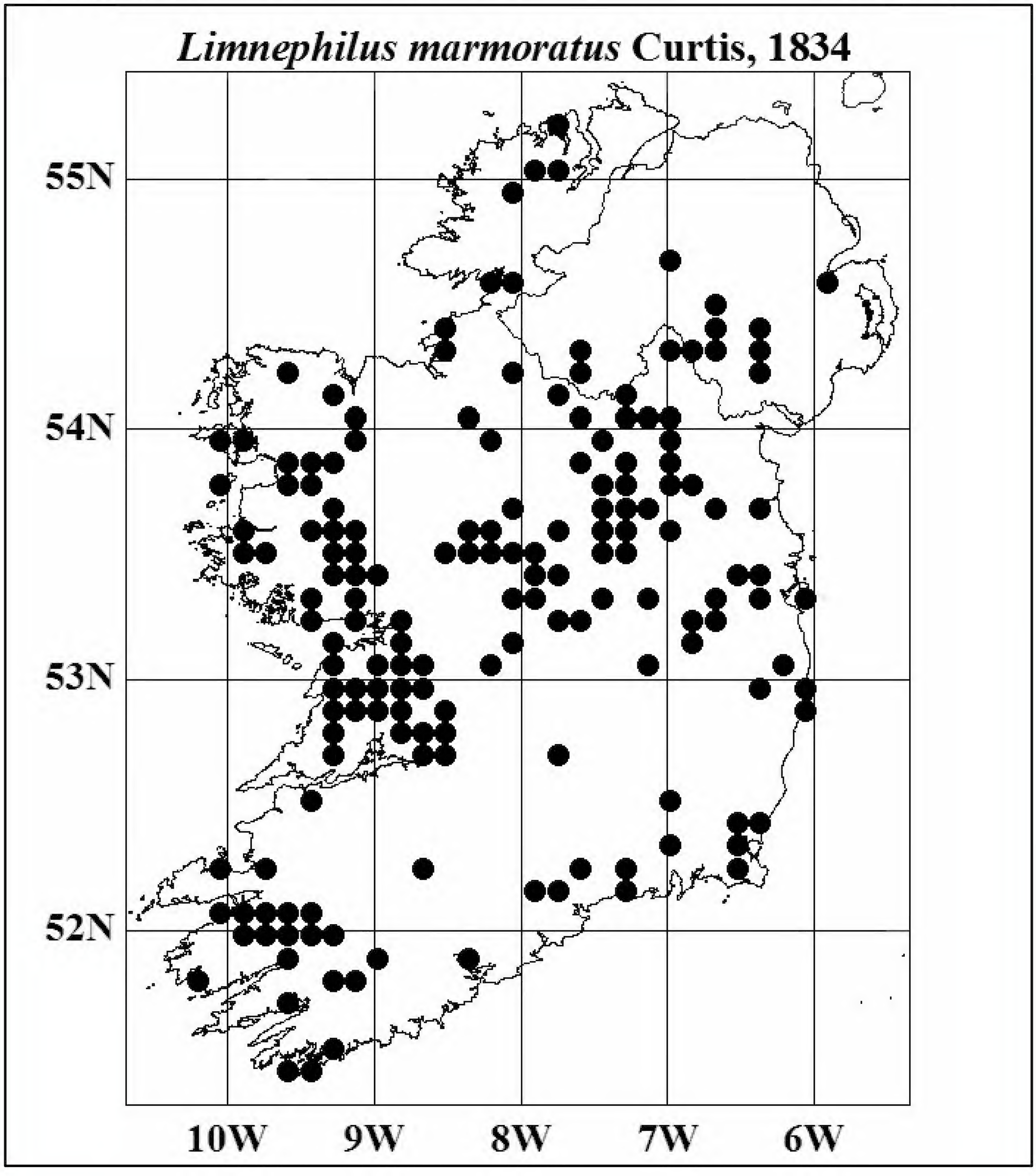


FIGURE 458. Known Irish distribution of *Limnephilus nigriceps* (Zetterstedt, 1840).

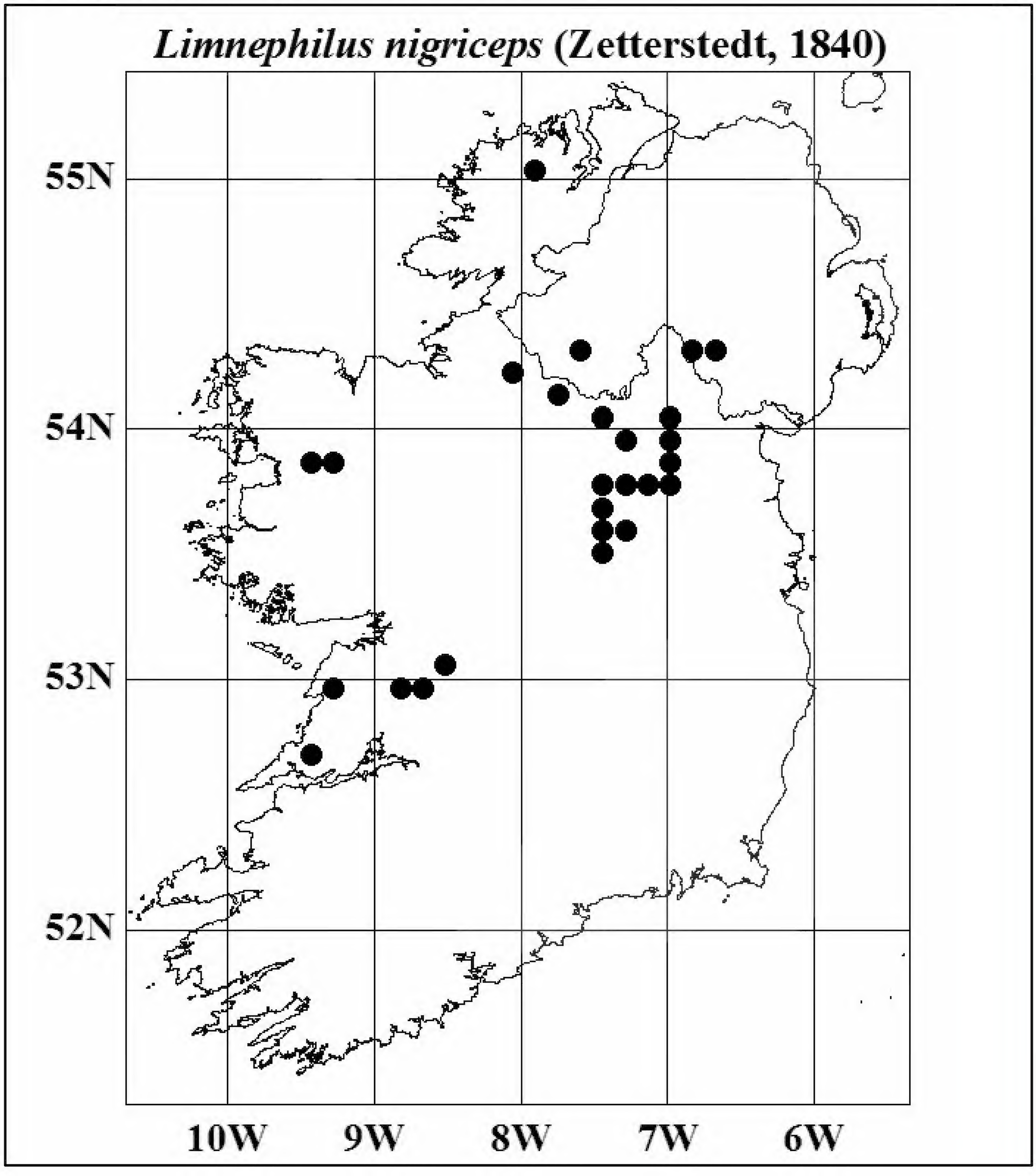


FIGURE 459. Known Irish distribution of *Limnephilus pati* O'Connor, 1980.

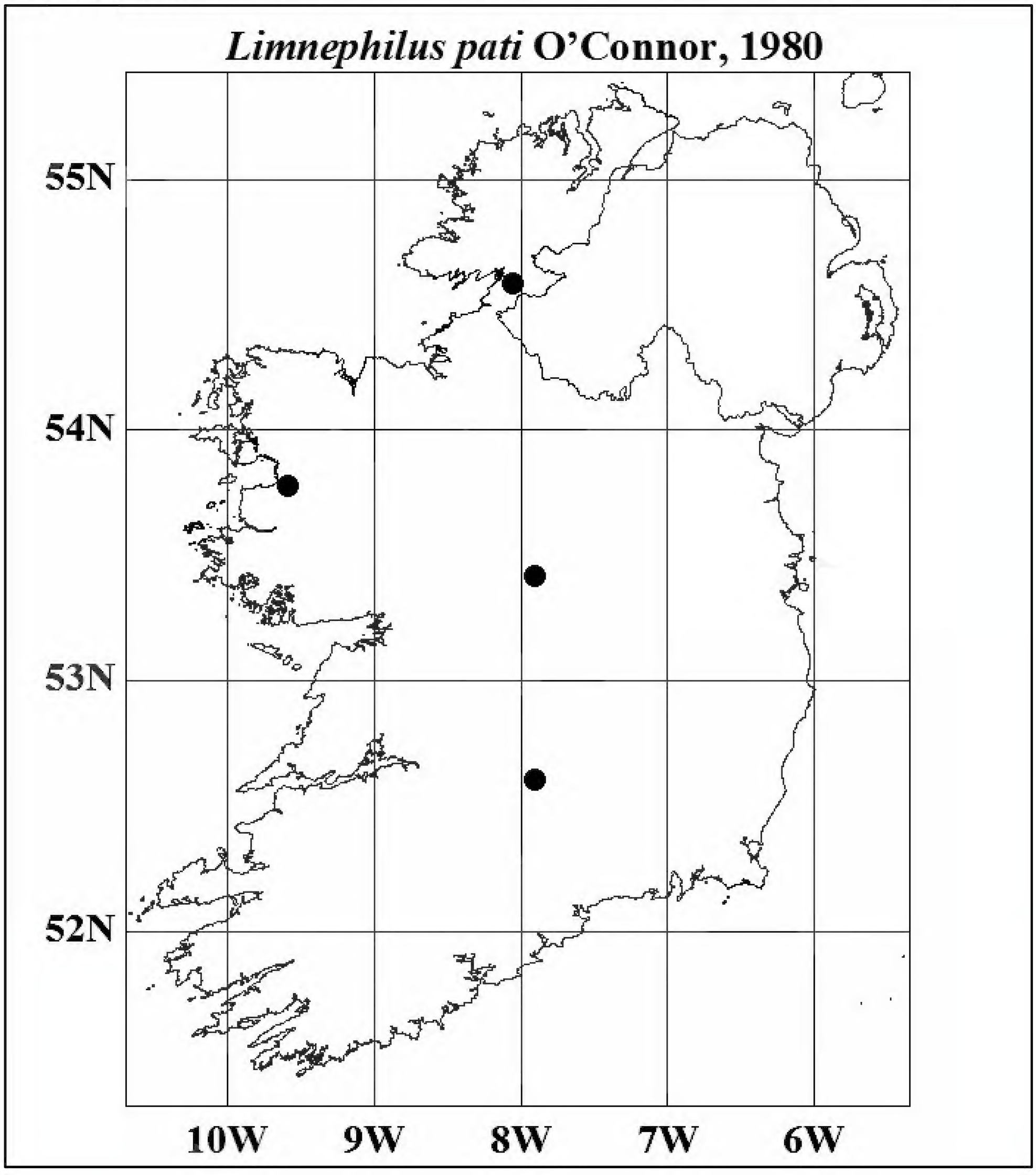


FIGURE 460. Known Irish distribution of *Limnephilus rhombicus* (Linnaeus, 1758).

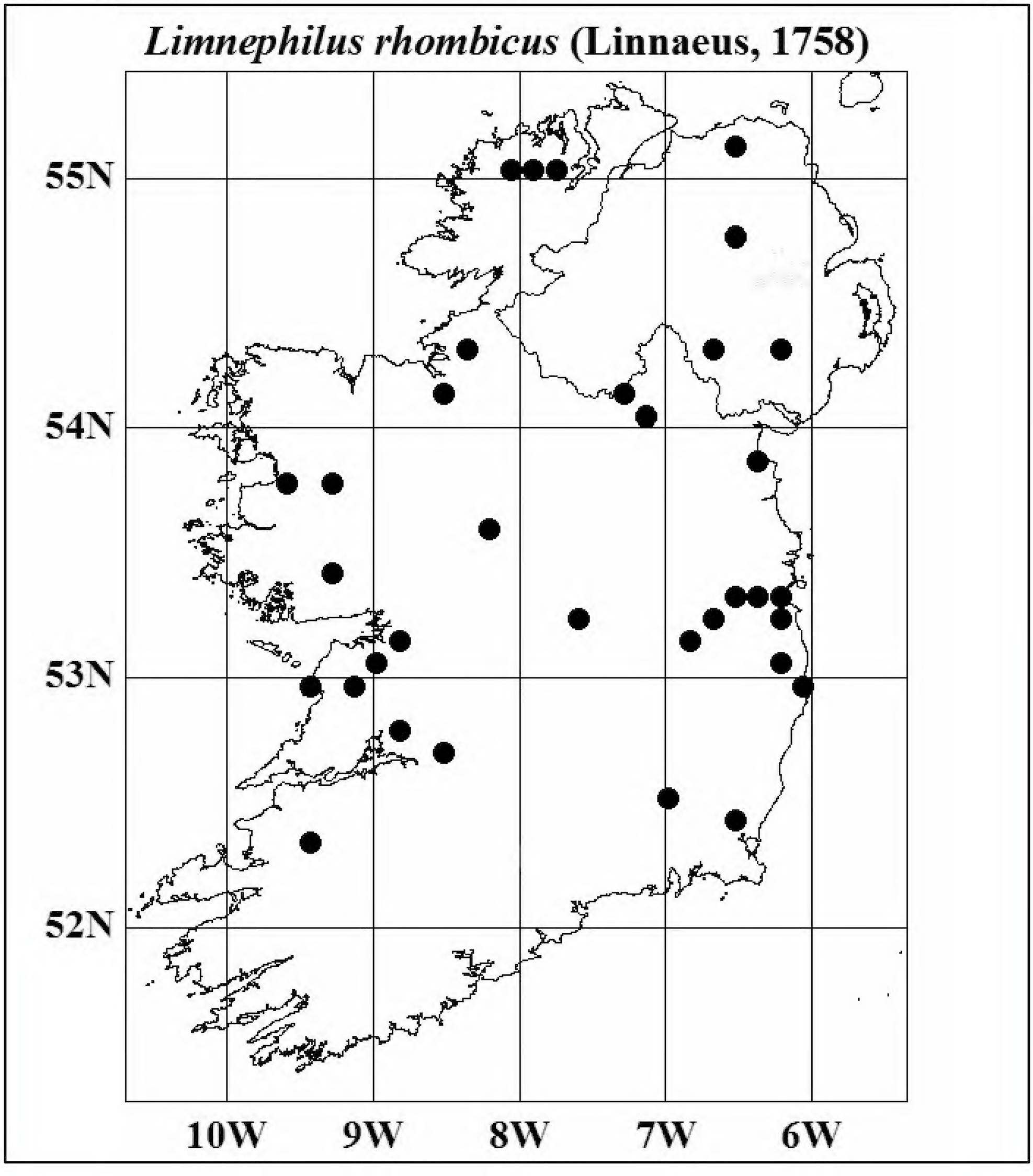


FIGURE 461. Known Irish distribution of *Limnephilus sparsus* Curtis, 1834.

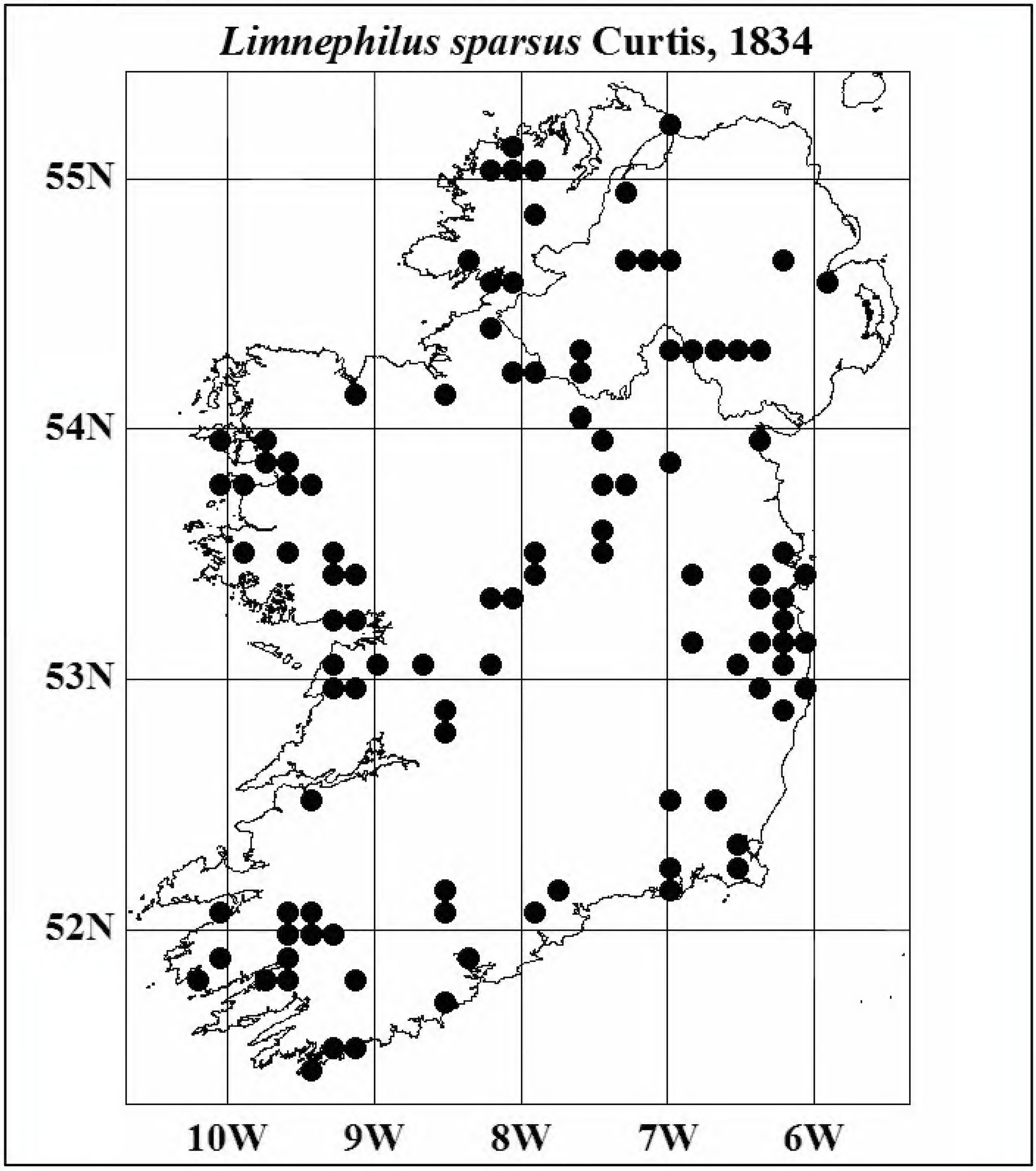


FIGURE 462. Known Irish distribution of *Limnephilus stigma* Curtis, 1834.

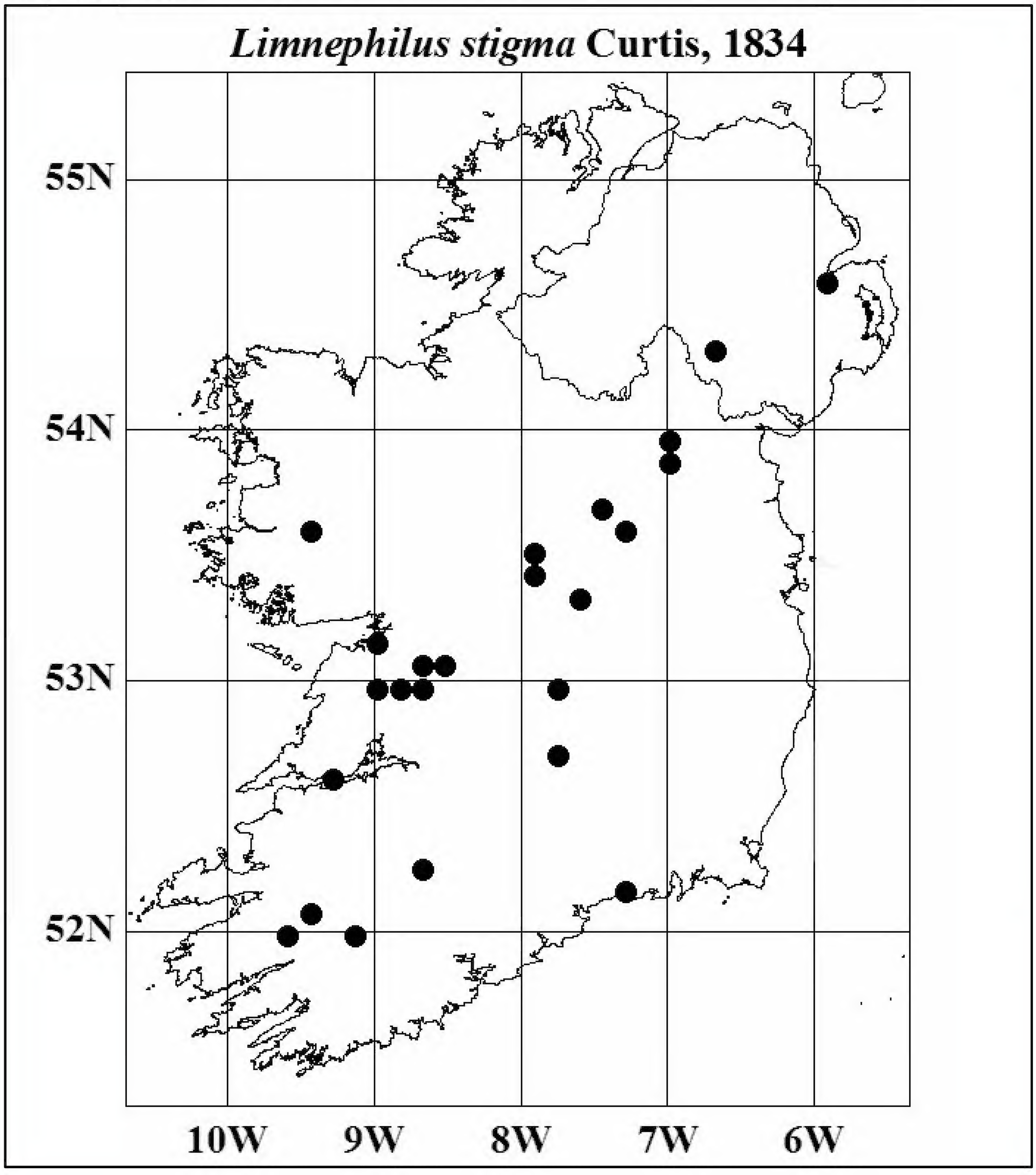


FIGURE 463. Known Irish distribution of *Limnephilus tauricus* Schmid, 1964.

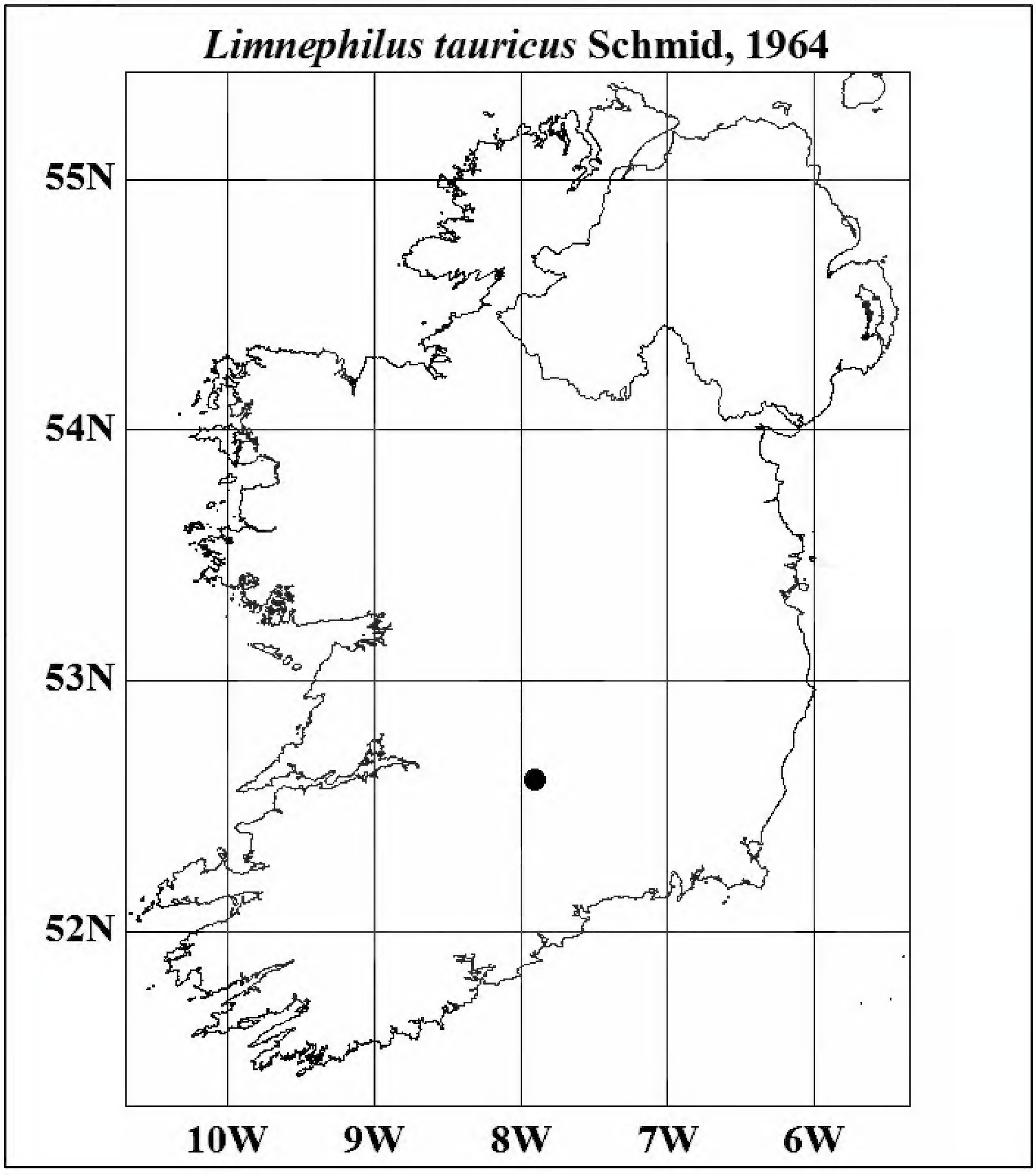


FIGURE 464. Known Irish distribution of *Limnephilus vittatus* (Fabricius, 1798).

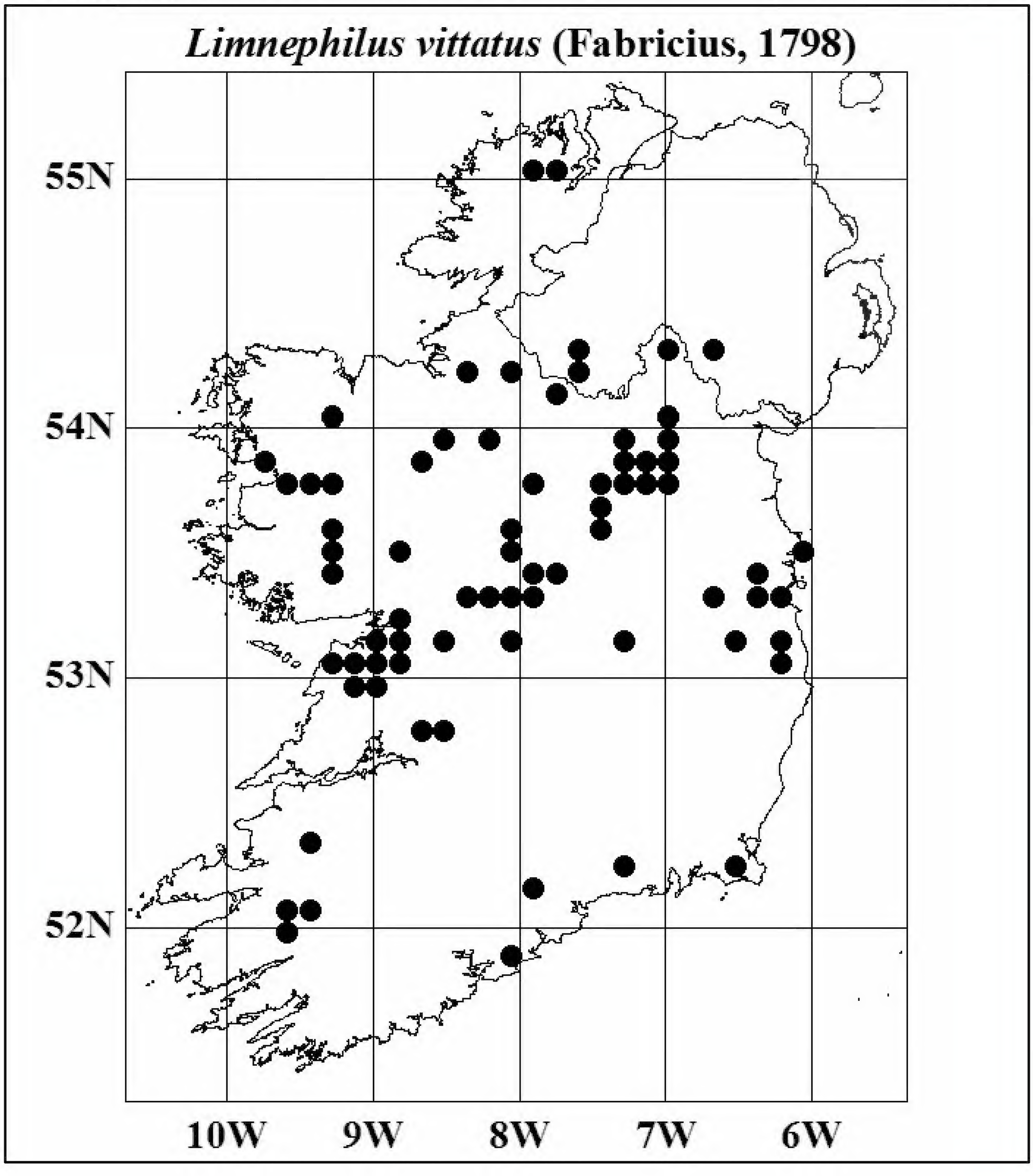


FIGURE 465. Known Irish distribution of *Halesus digitatus* (Schrank, 1781).

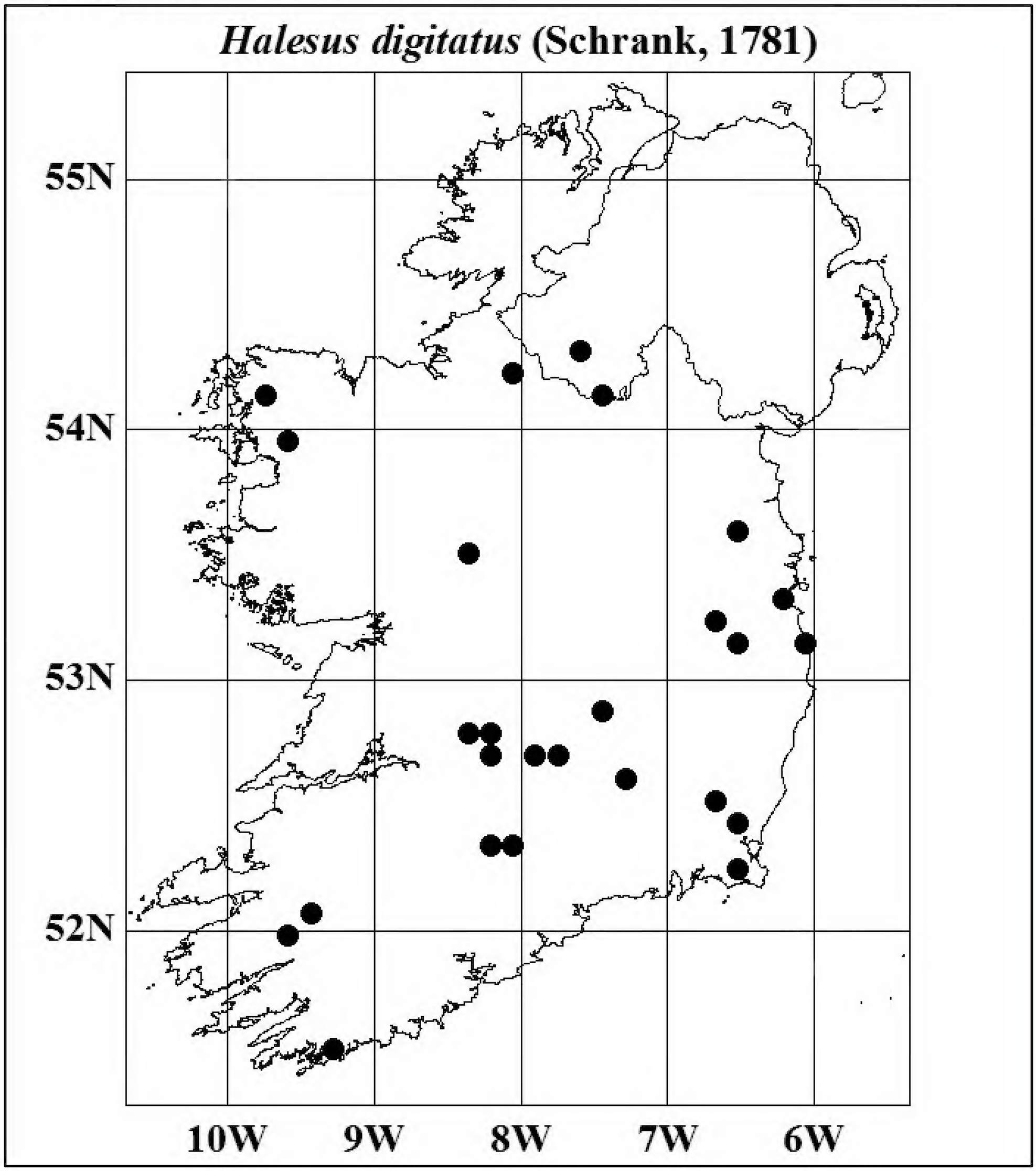


FIGURE 466. Known Irish distribution of *Halesus radiatus* (Curtis, 1834).

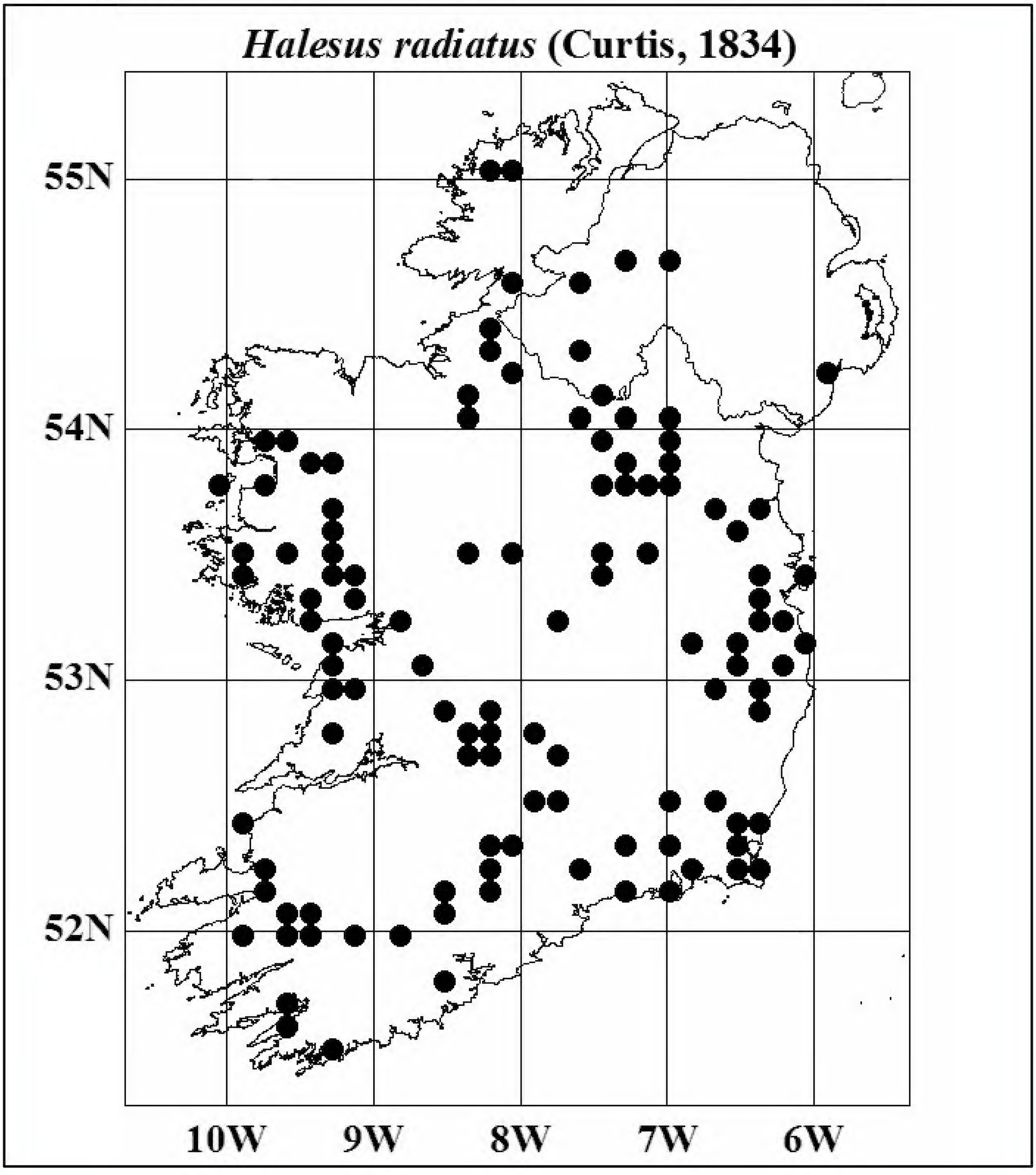


FIGURE 467. Known Irish distribution of *Hydatophylax infumatus* (McLachlan, 1865).

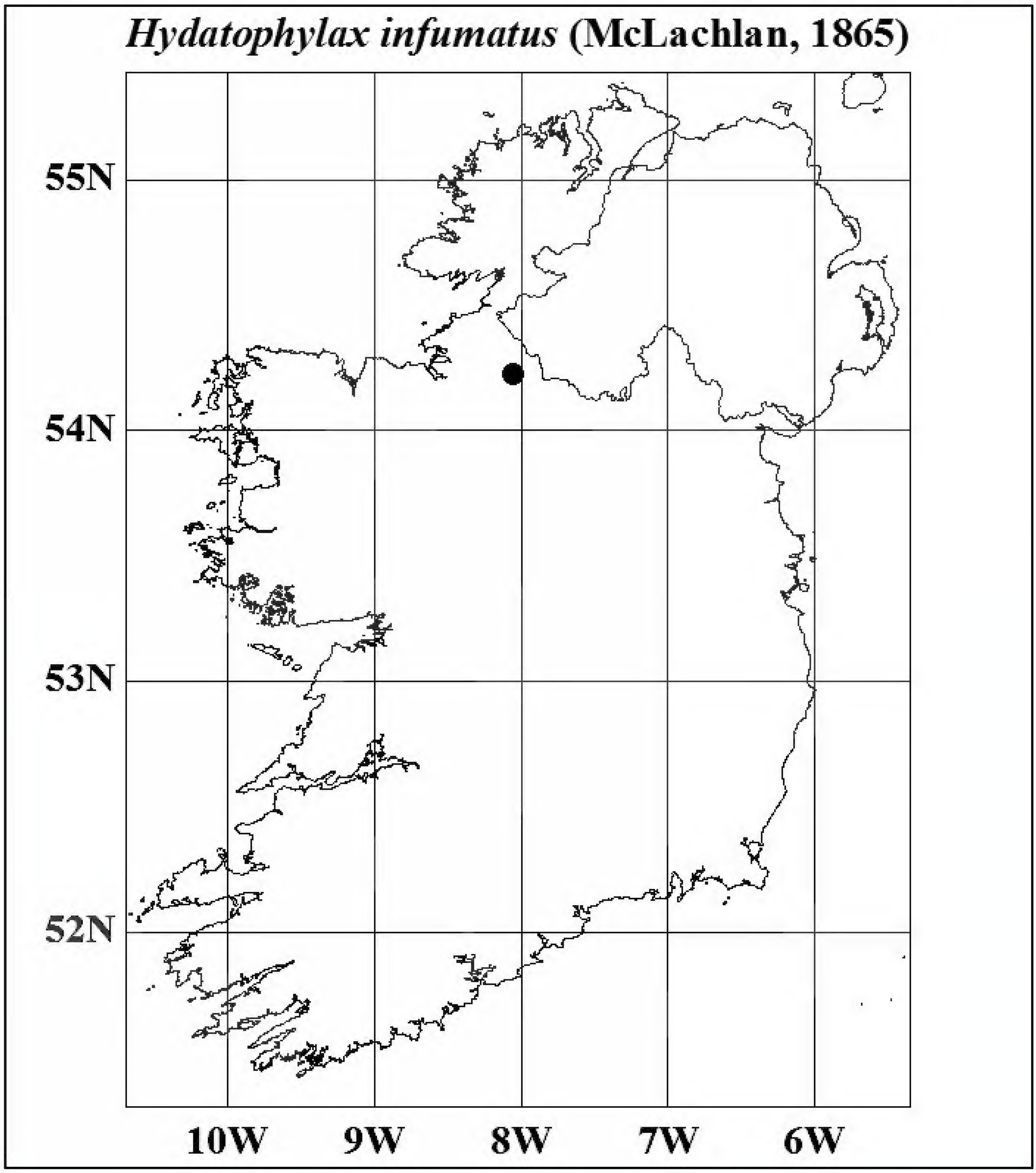


FIGURE 468. Known Irish distribution of *Mesophylax impunctatus* McLachlan, 1884.

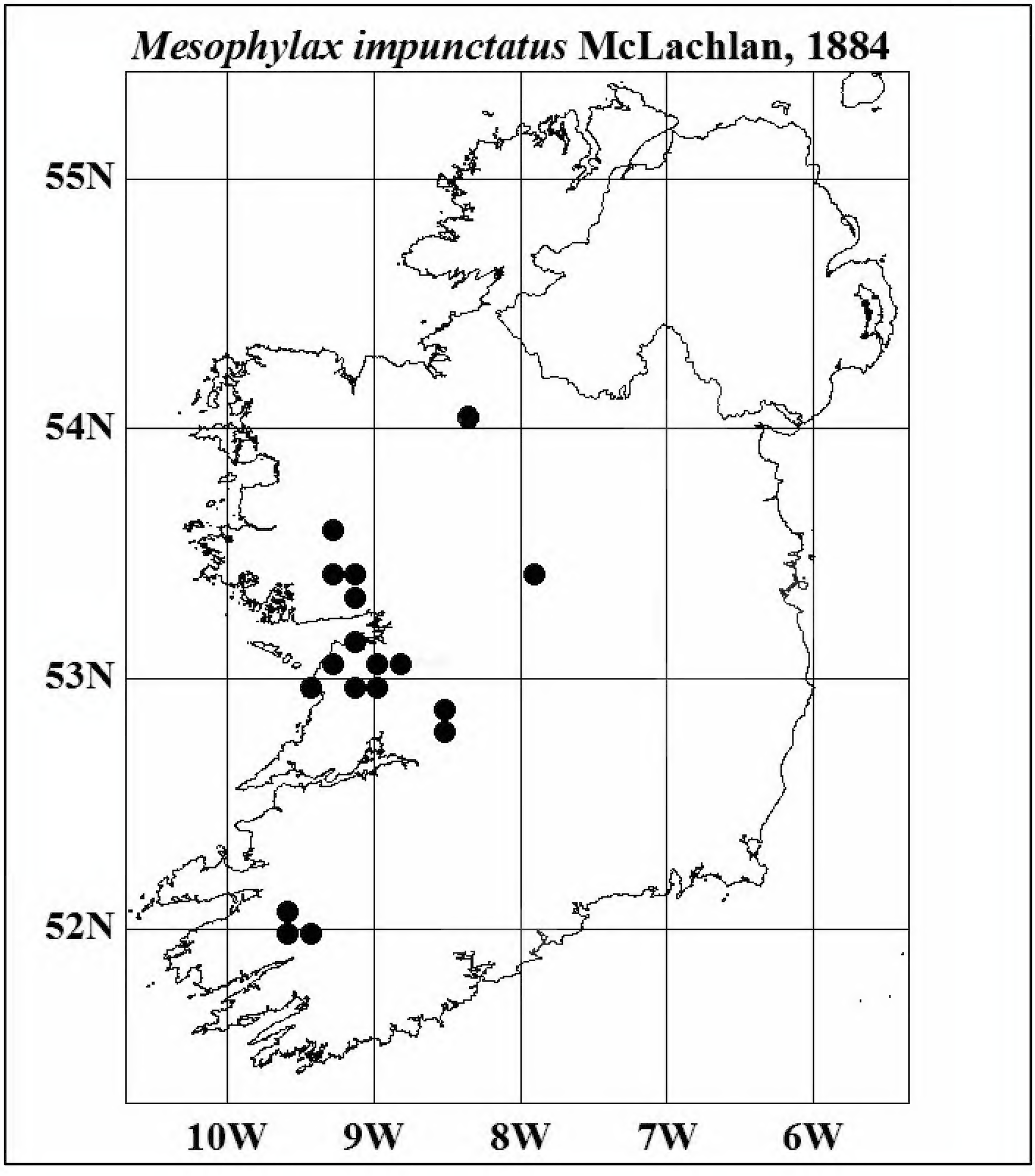


FIGURE 469. Known Irish distribution of *Micropterna lateralis* (Stephens, 1837).

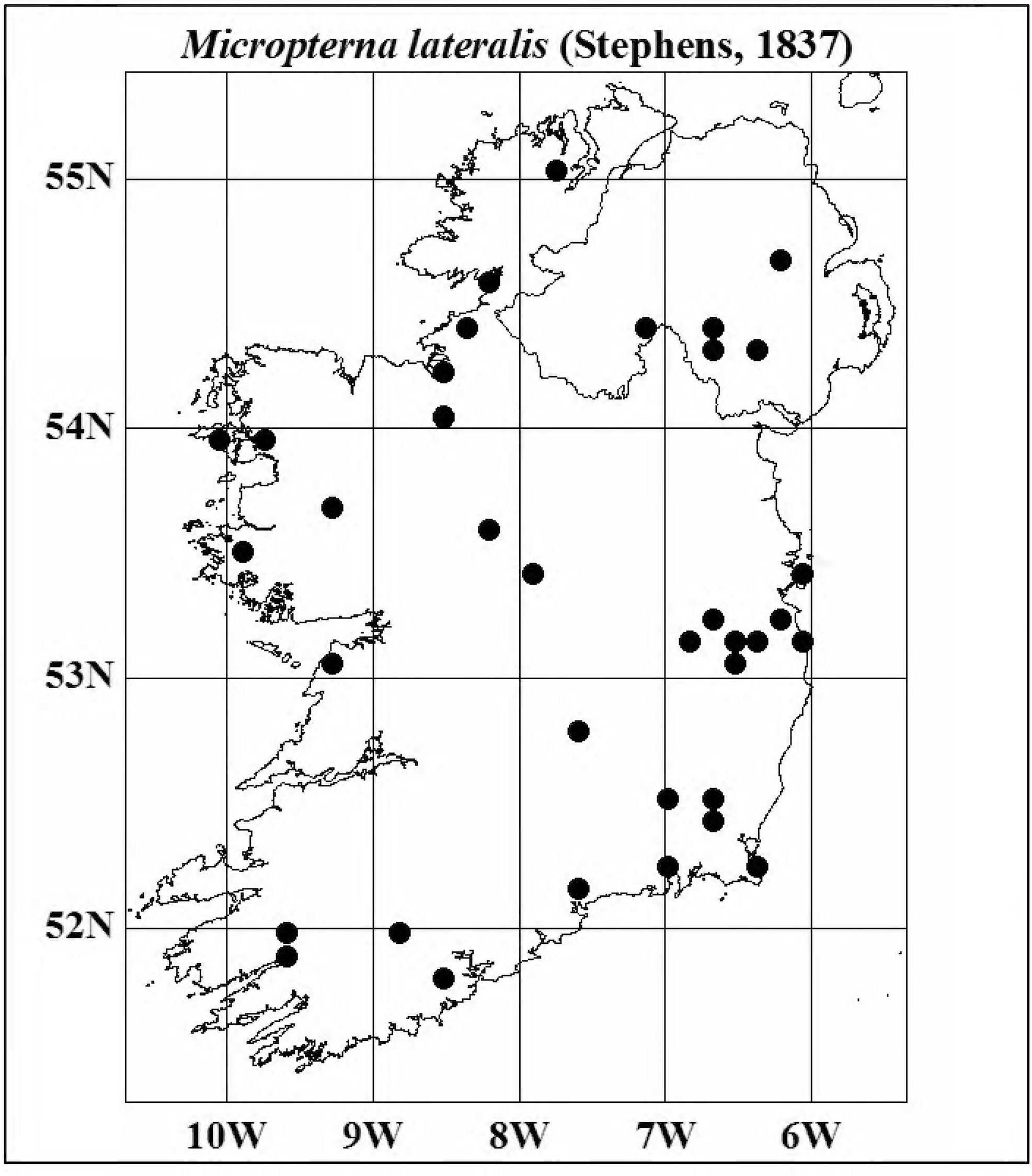


FIGURE 470. Known Irish distribution of *Micropterna sequax* McLachlan, 1875.

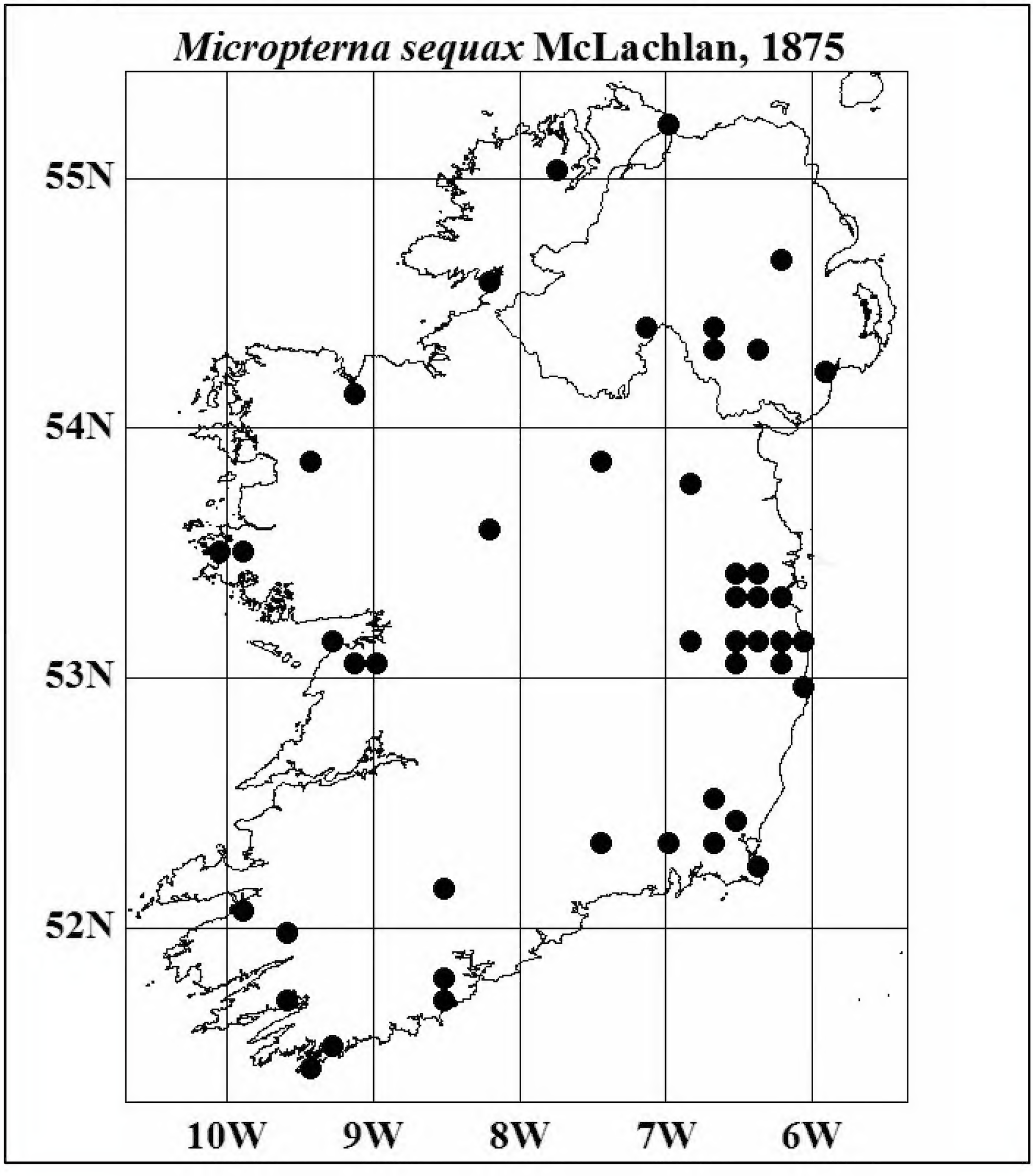


FIGURE 471. Known Irish distribution of *Potamophylax cingulatus* (Stephens, 1837).

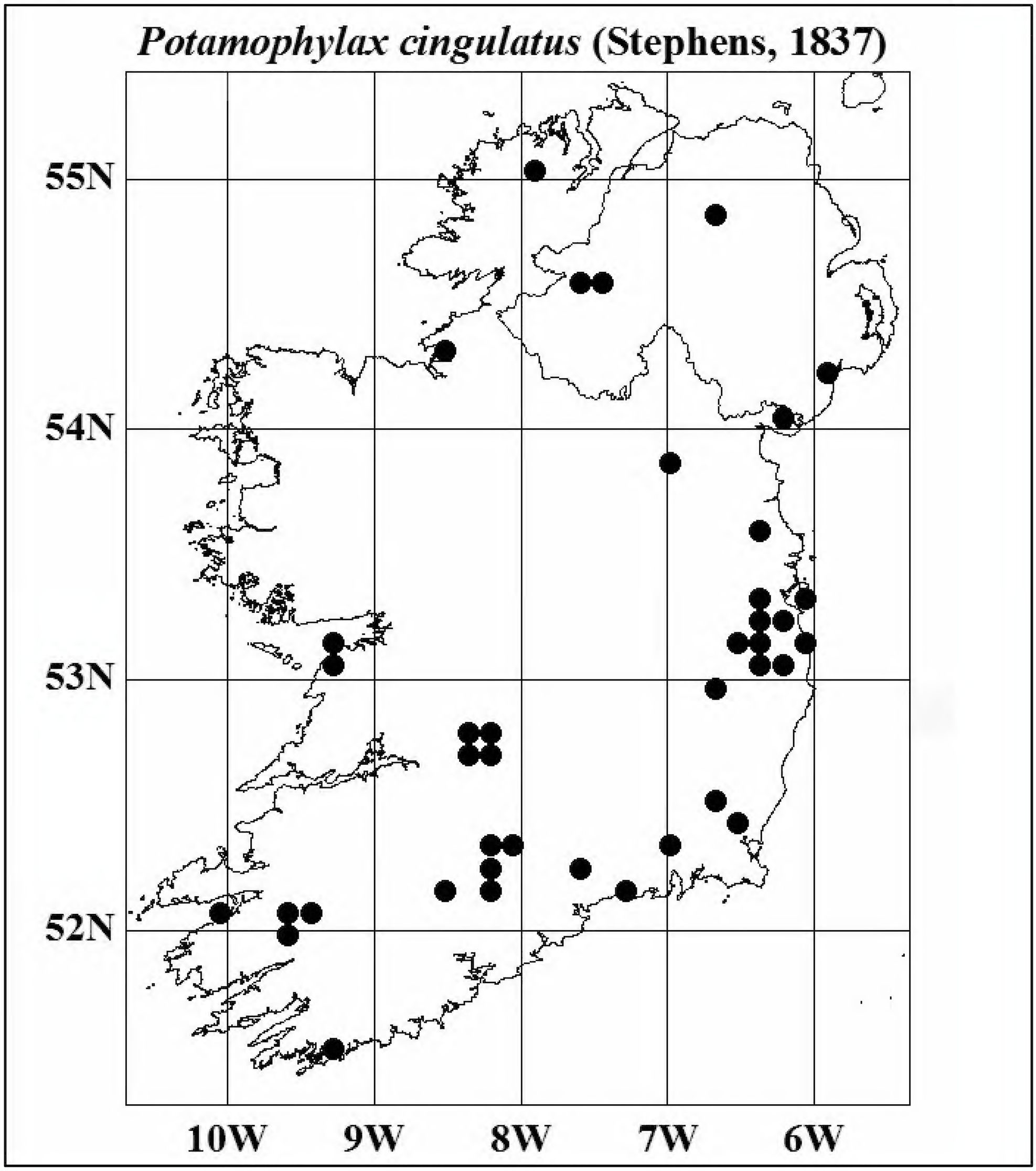


FIGURE 472. Known Irish distribution of *Potamophylax latipennis* (Curtis, 1834).

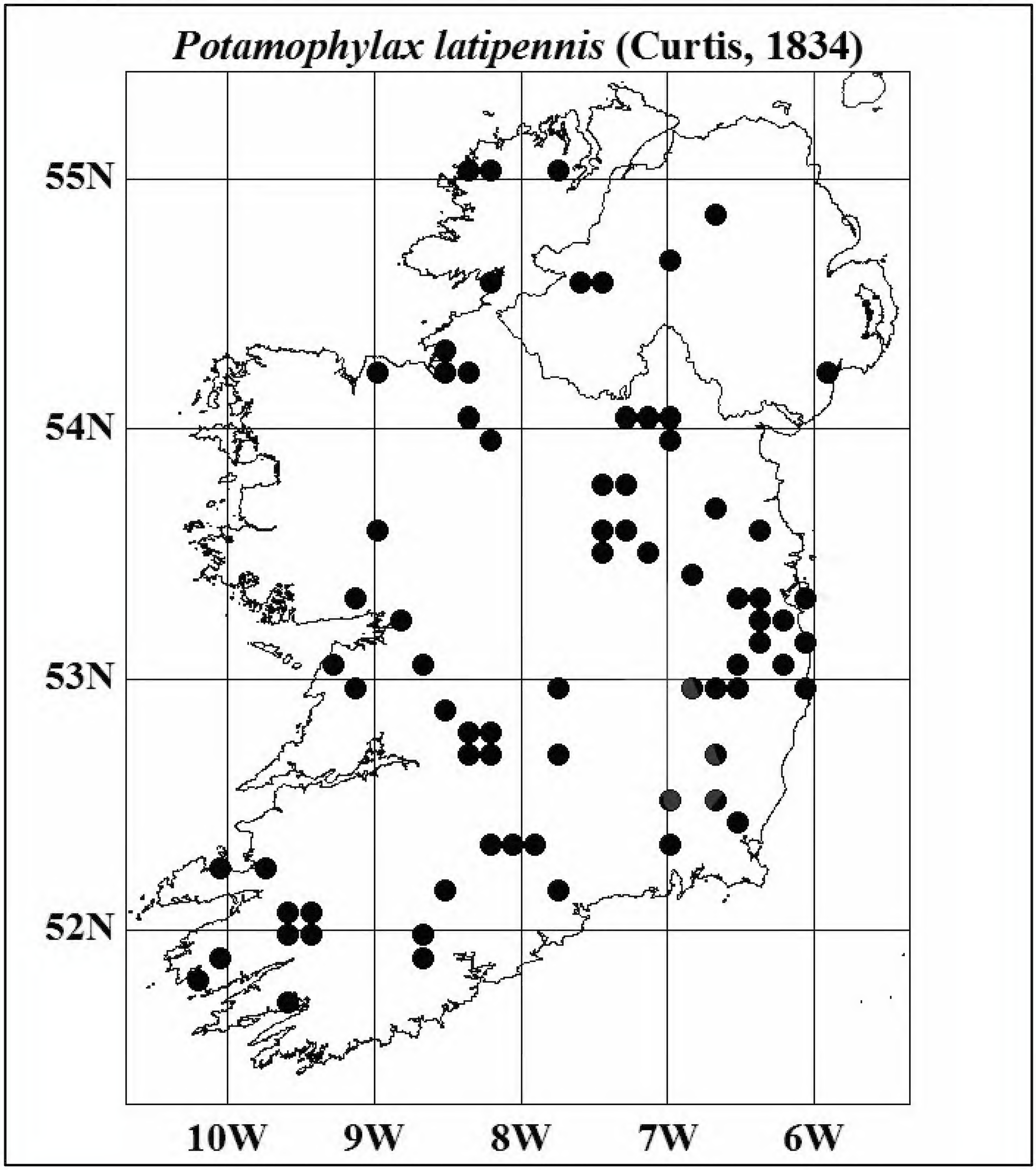


FIGURE 473. Known Irish distribution of *Stenophylax permistus* McLachlan, 1895.

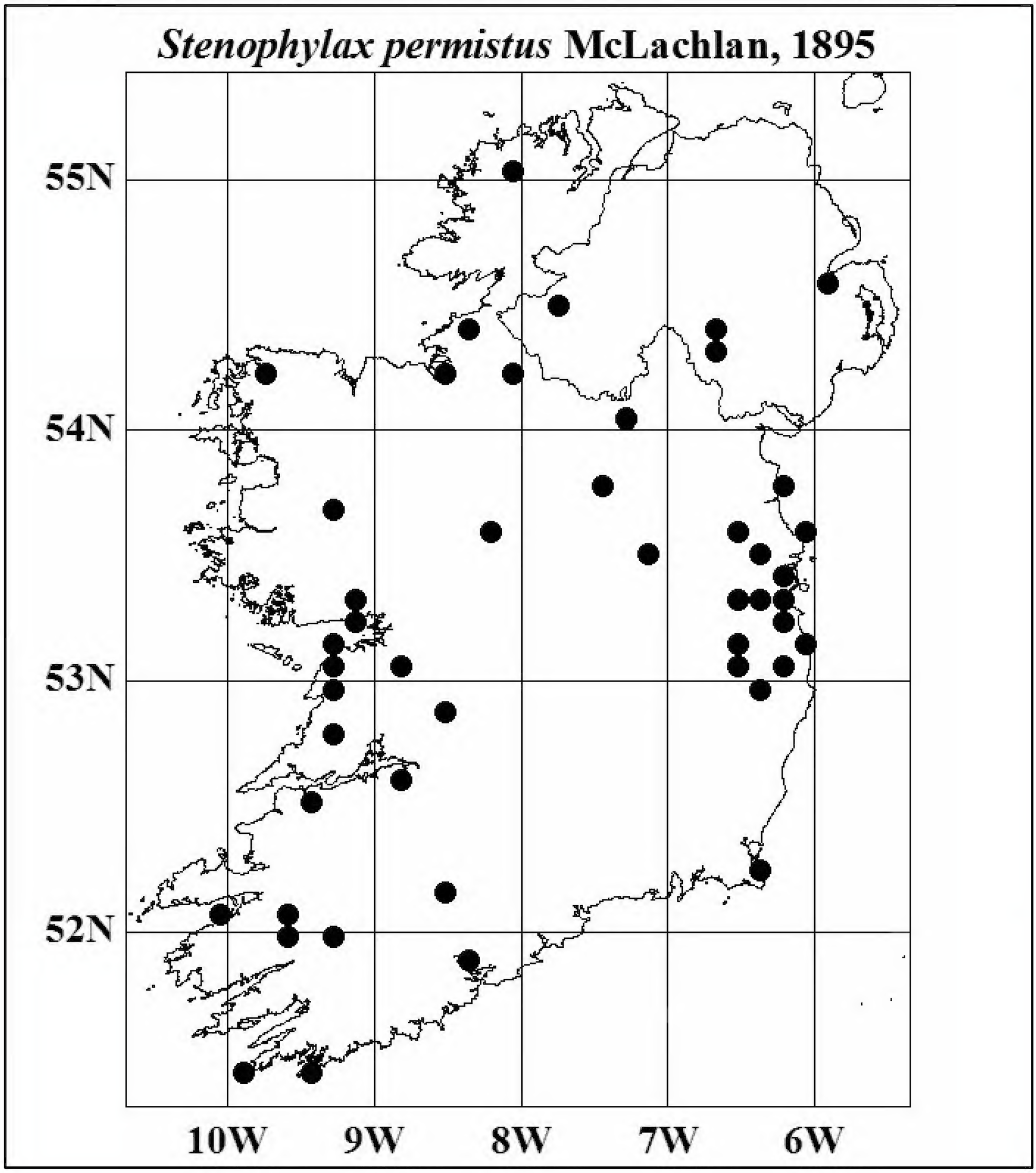


FIGURE 474. Known Irish distribution of *Sericostoma personatum* (Spence, 1826).

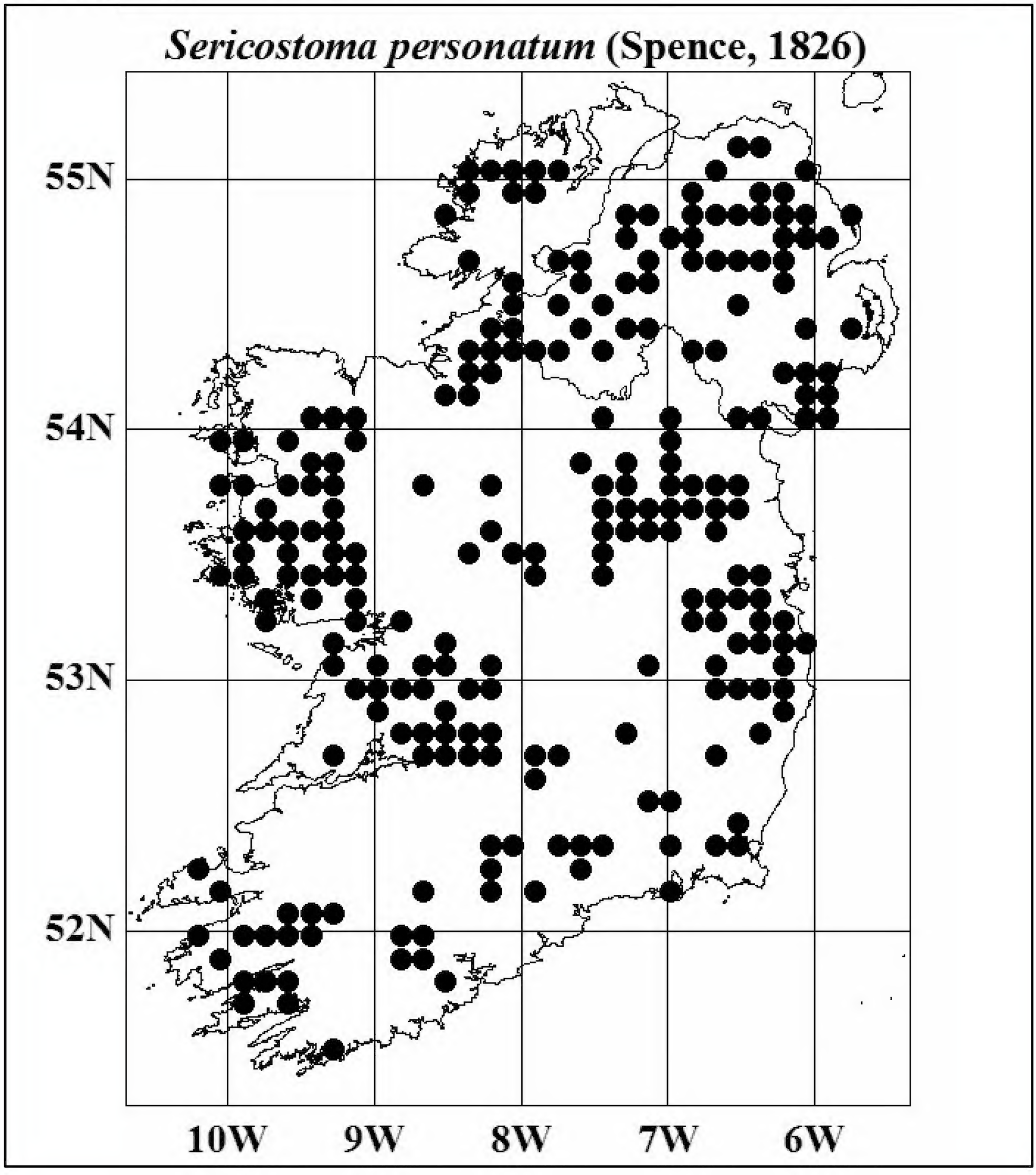


FIGURE 475. Known Irish distribution of *Beraea maurus* (Curtis, 1834).

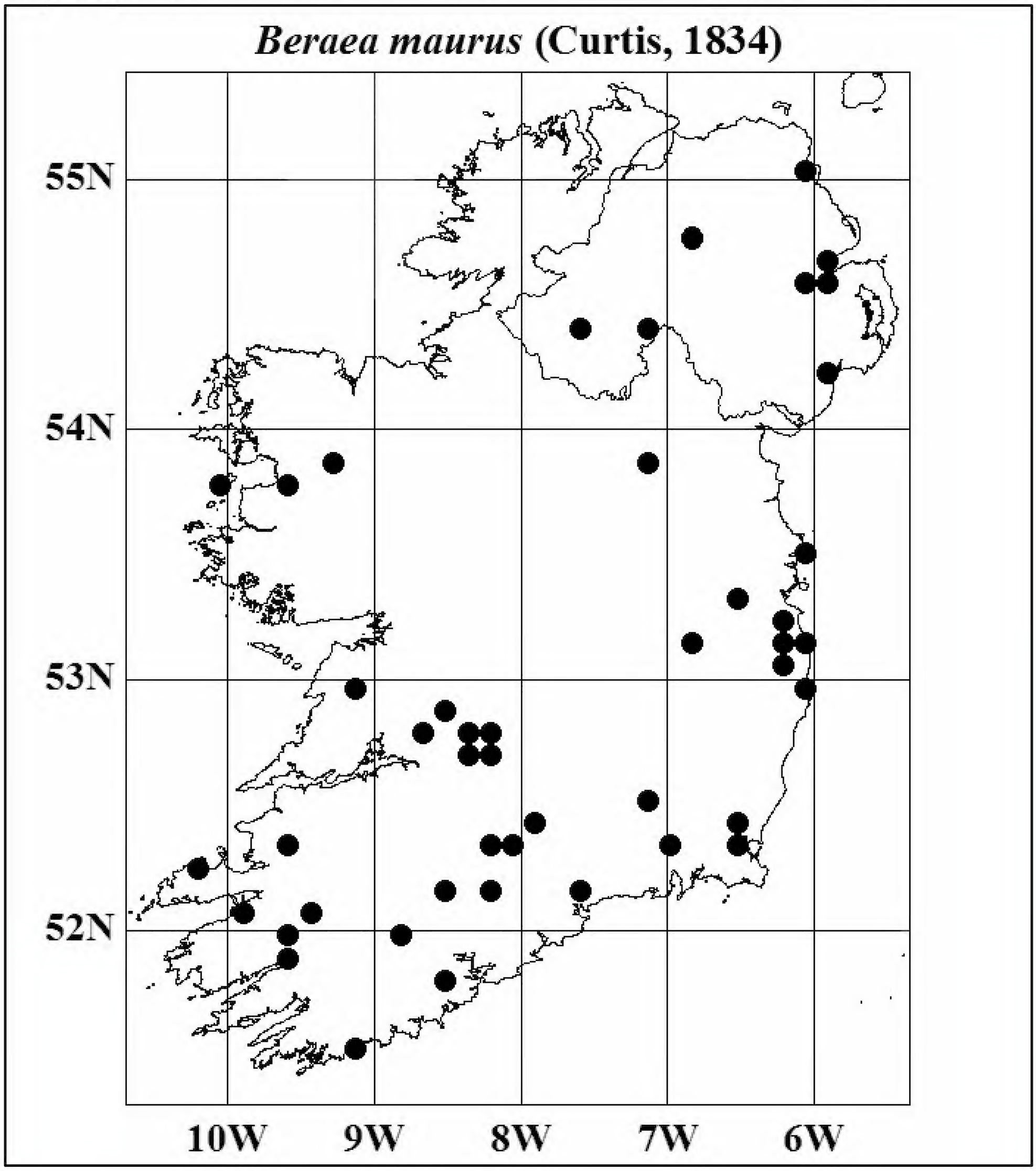


FIGURE 476. Known Irish distribution of *Beraea pullata* (Curtis, 1834).

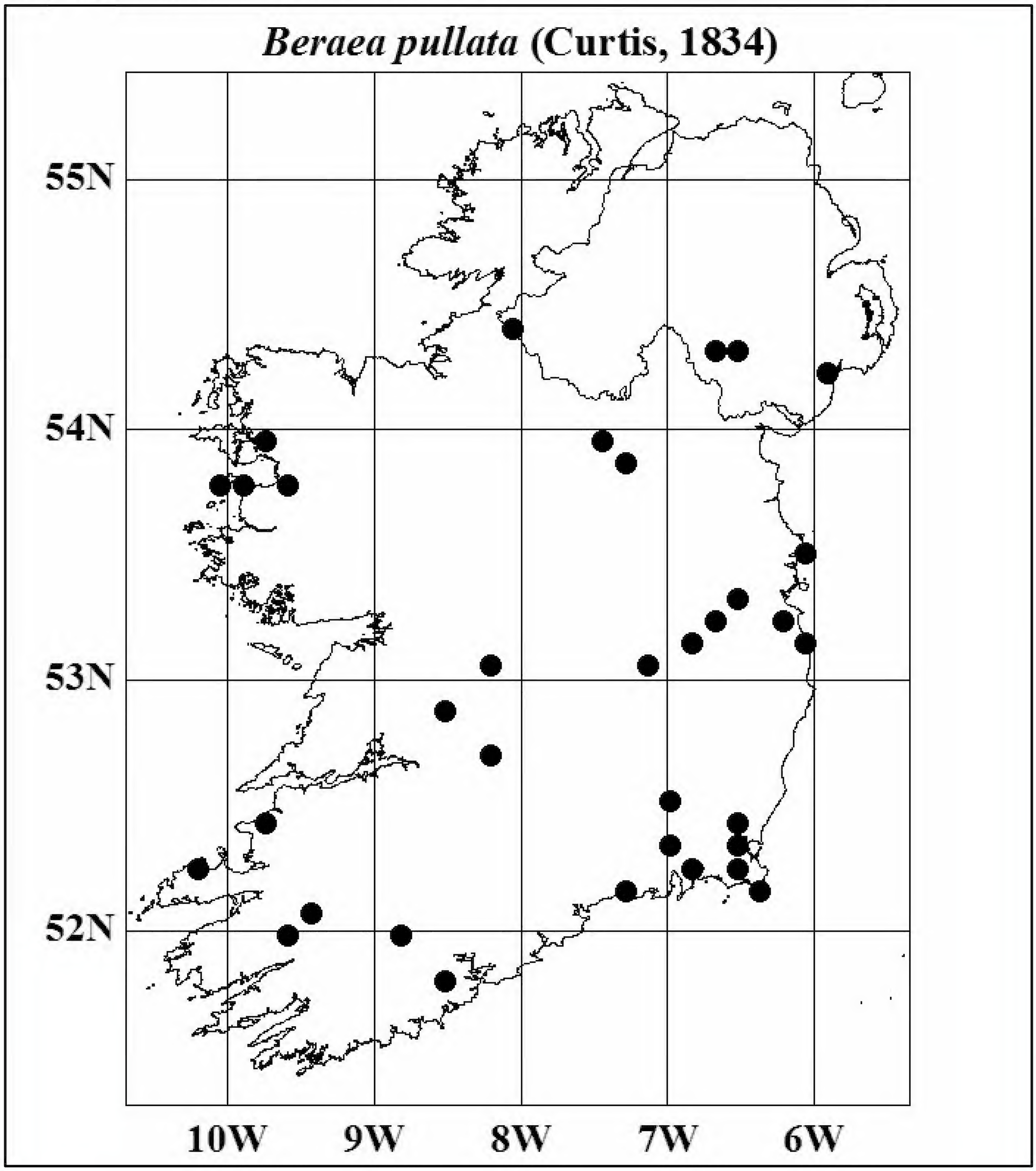


FIGURE 477. Known Irish distribution of *Beraeodes minutus* (Linnaeus, 1761).

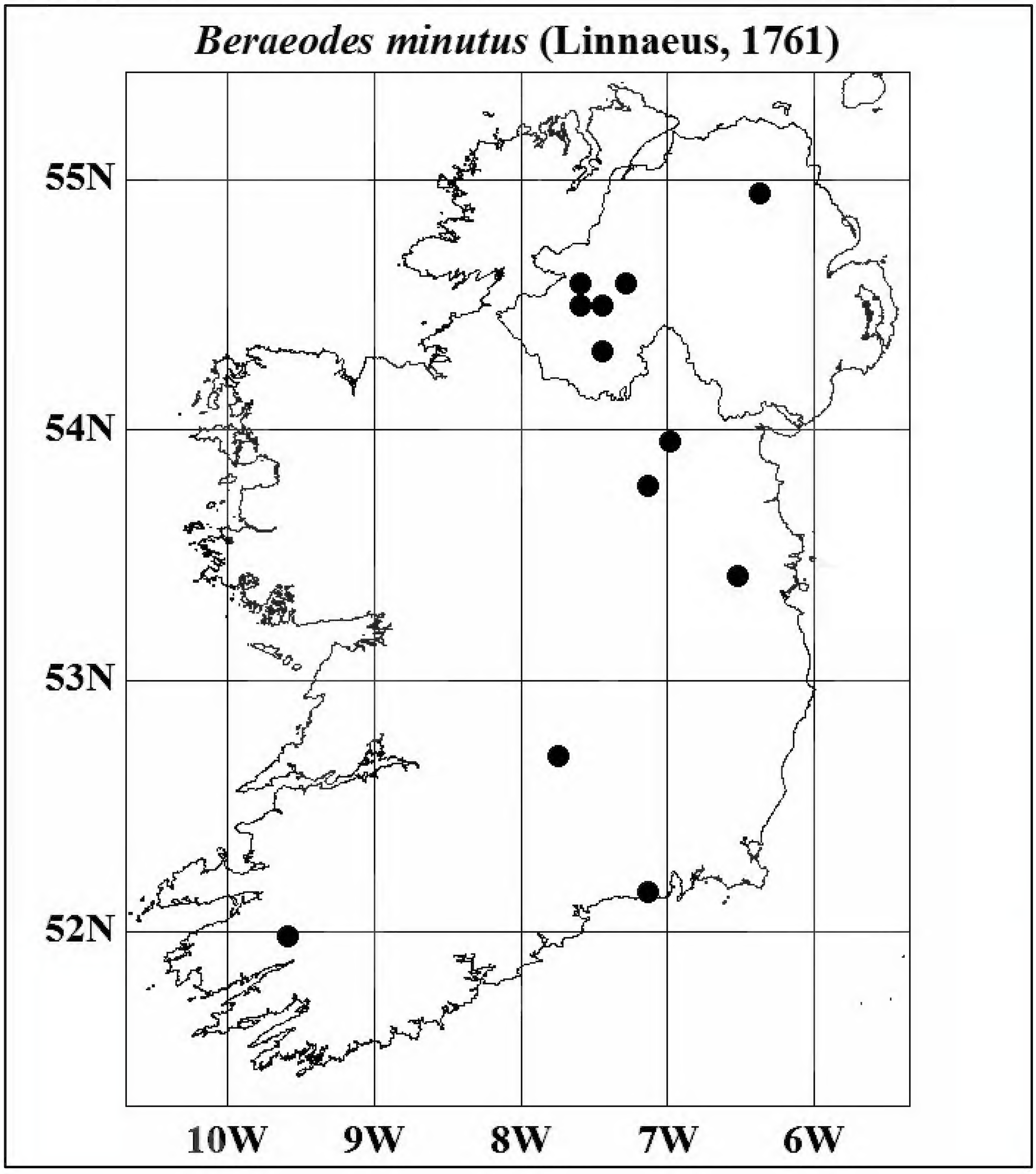


FIGURE 478. Known Irish distribution of *Odontocerum albicorne* (Scopoli, 1763).

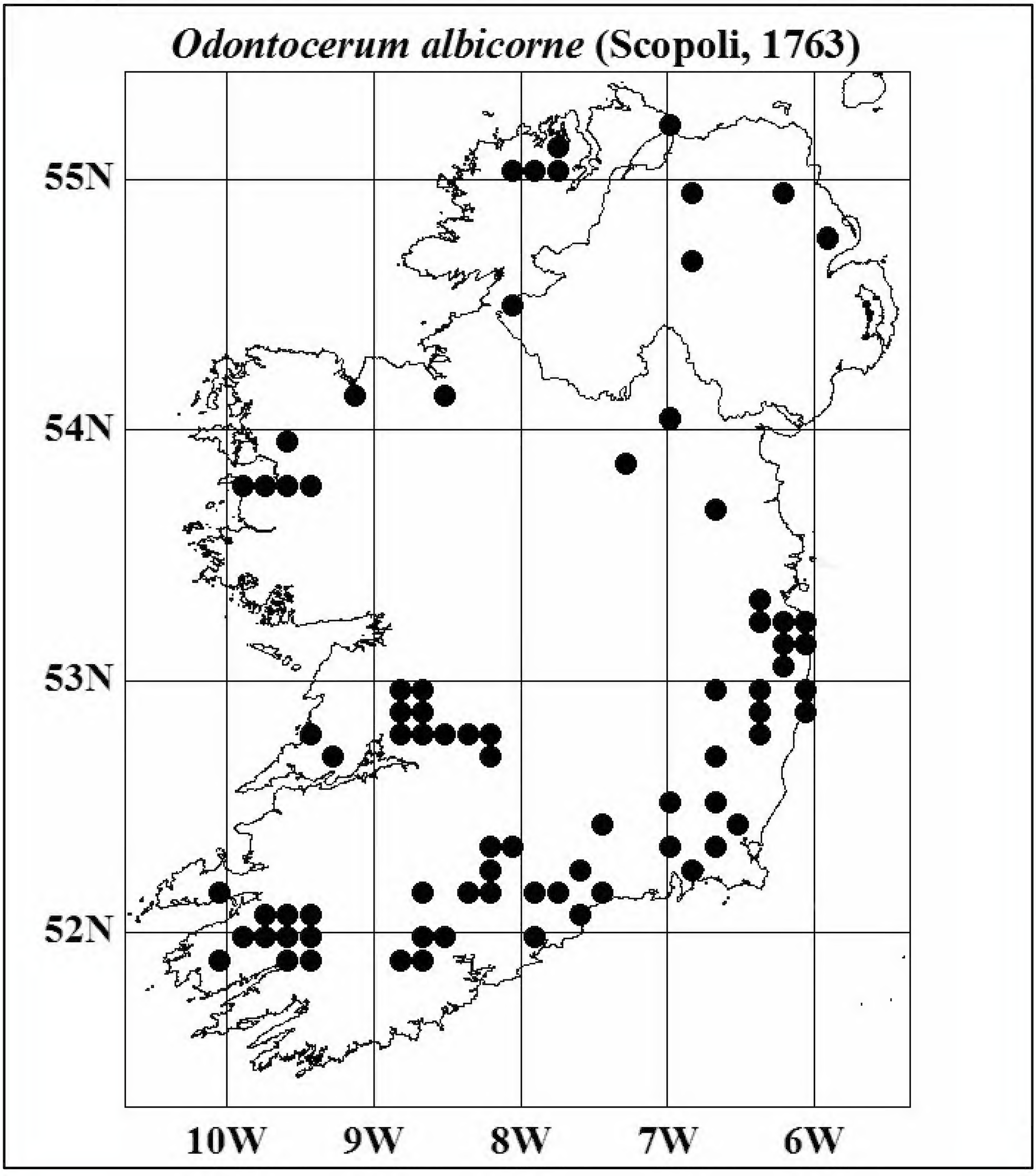


FIGURE 479. Known Irish distribution of *Molanna albicans* (Zetterstedt, 1840).

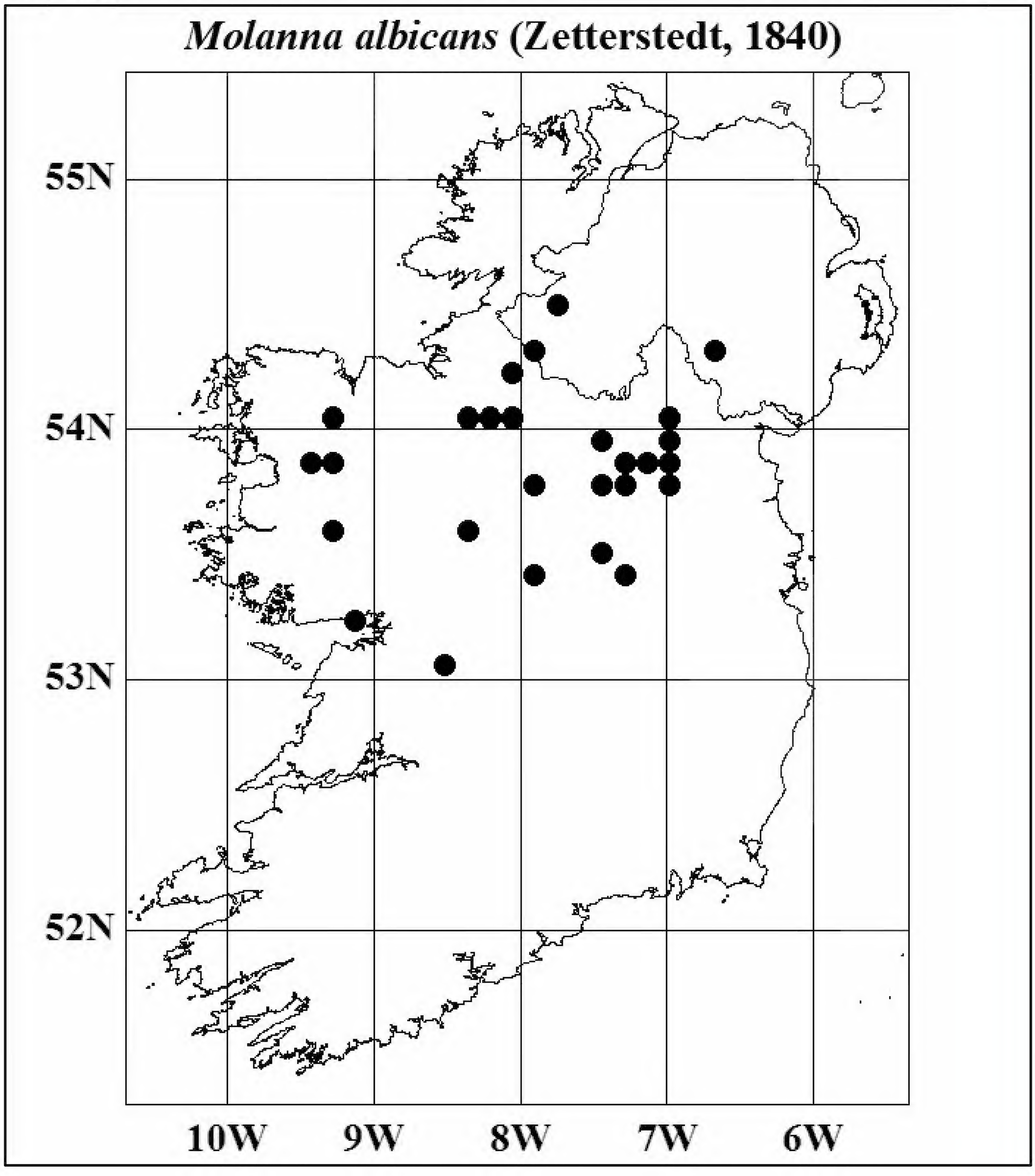


FIGURE 480. Known Irish distribution of *Adicella reducta* (McLachlan, 1865).

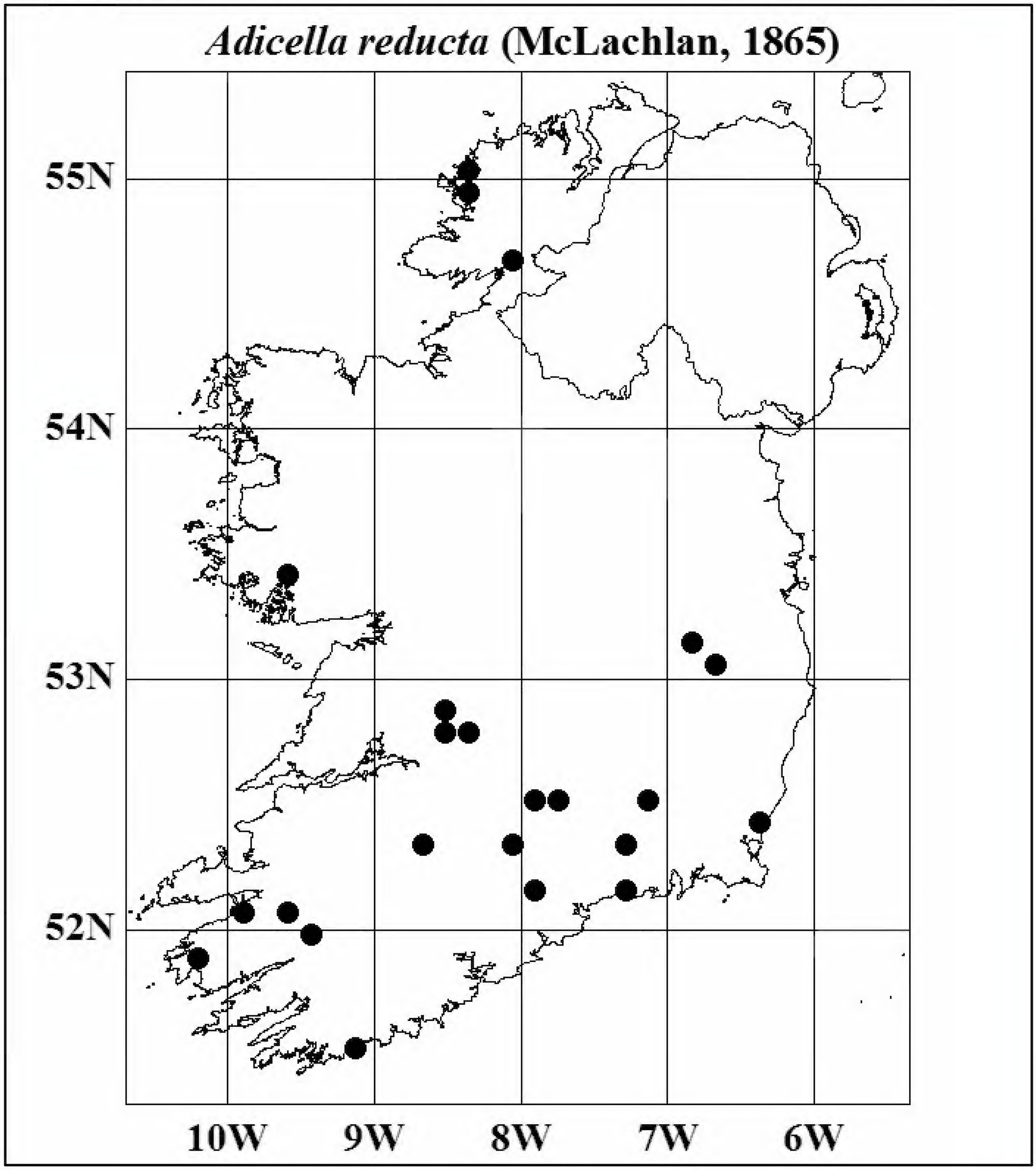


FIGURE 481. Known Irish distribution of *Athripsodes albifrons* (Linnaeus, 1758).

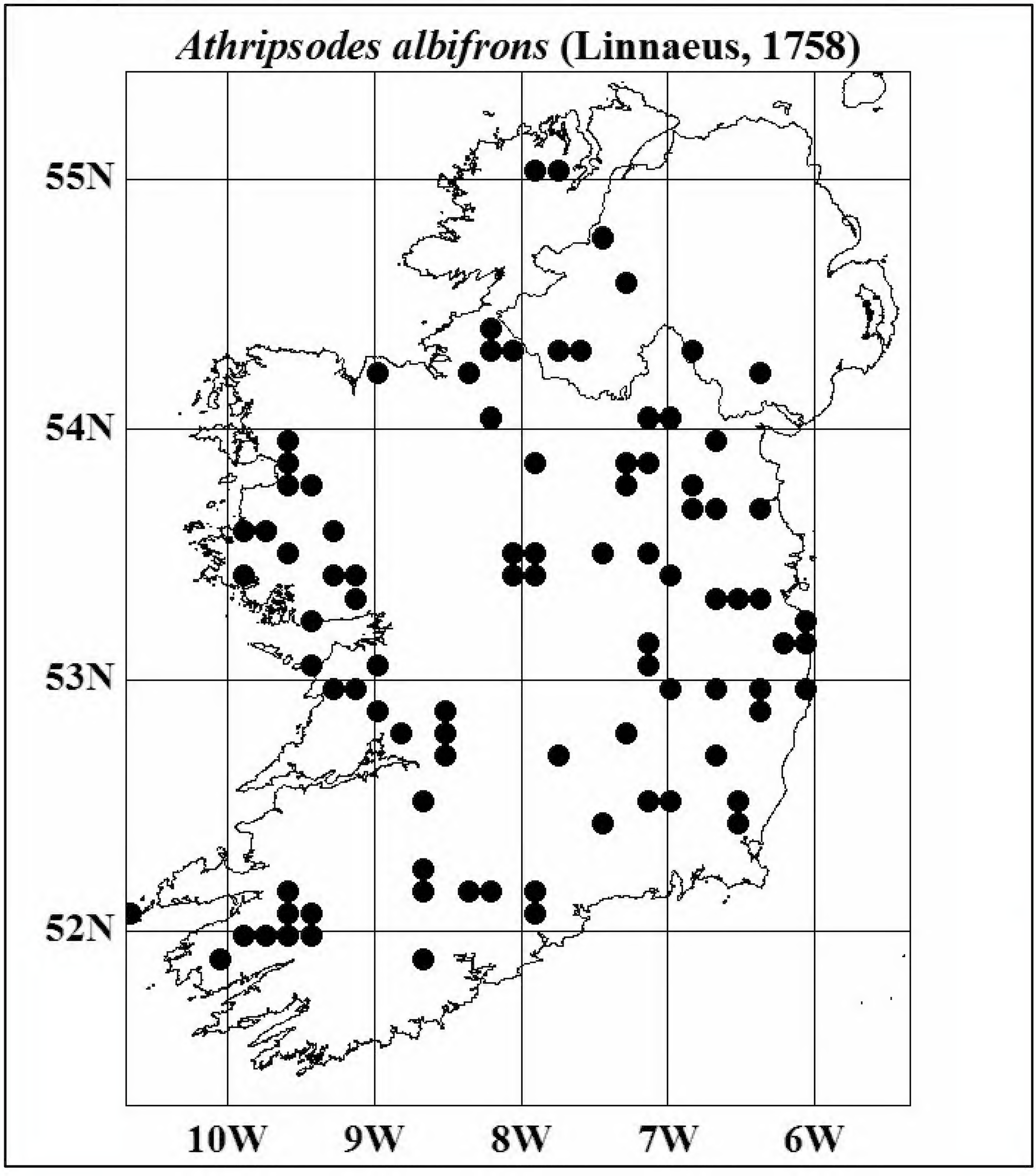


FIGURE 482. Known Irish distribution of *Athripsodes aterrimus* (Stephens, 1836).

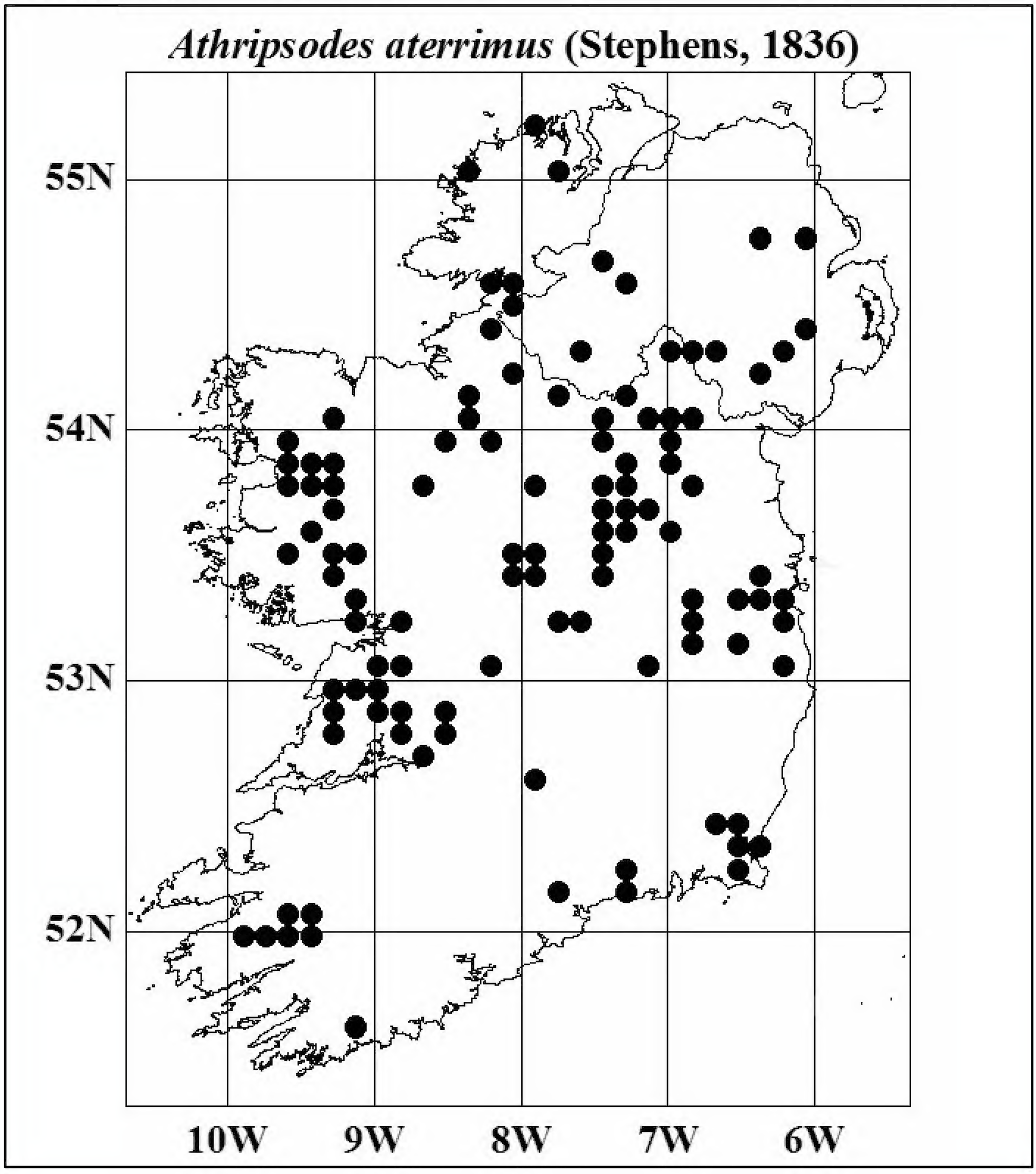


FIGURE 483. Known Irish distribution of *Athripsodes bilineatus* (Linnaeus, 1758).

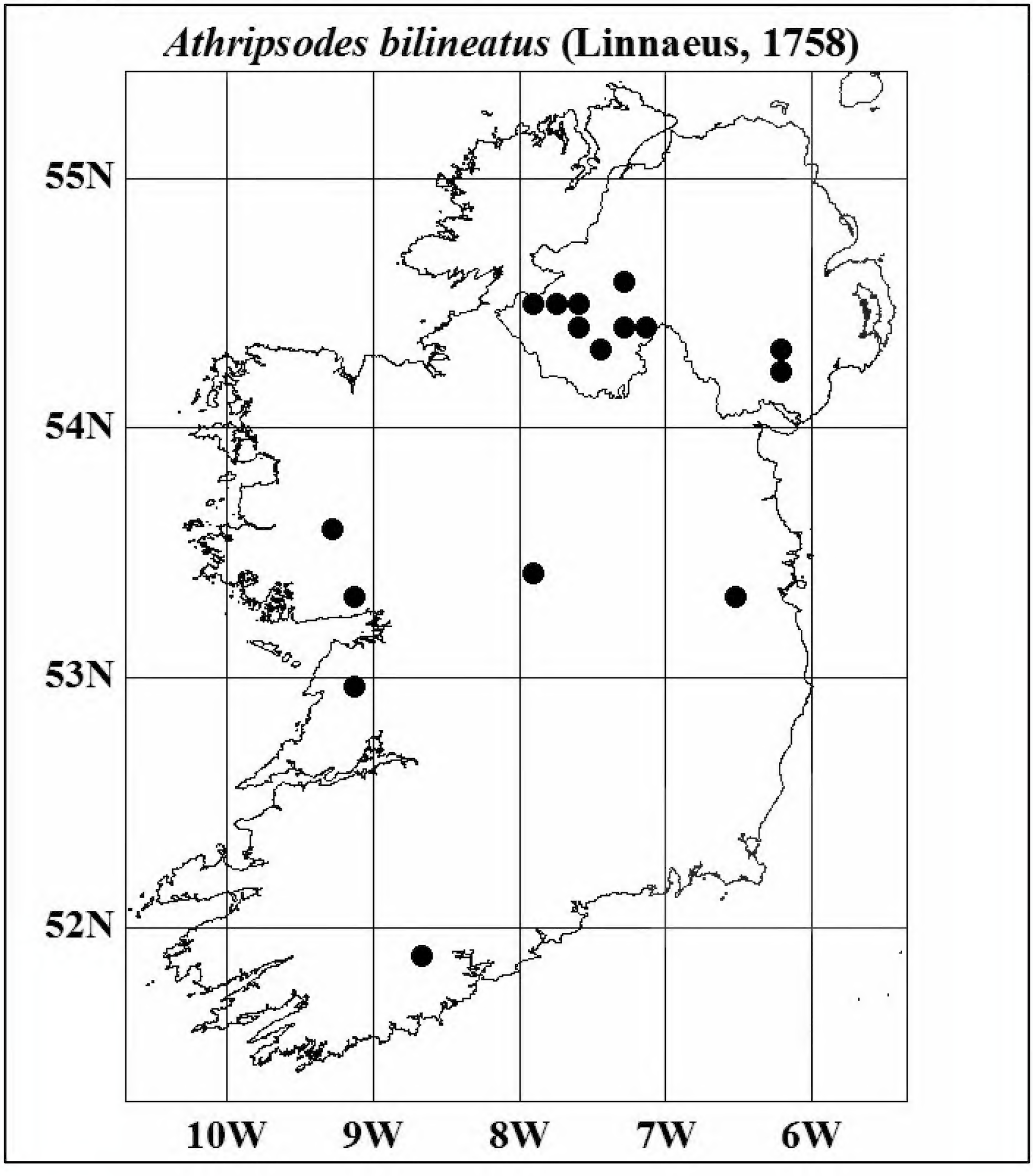


FIGURE 484. Known Irish distribution of *Athripsodes cinereus* (Curtis, 1834).

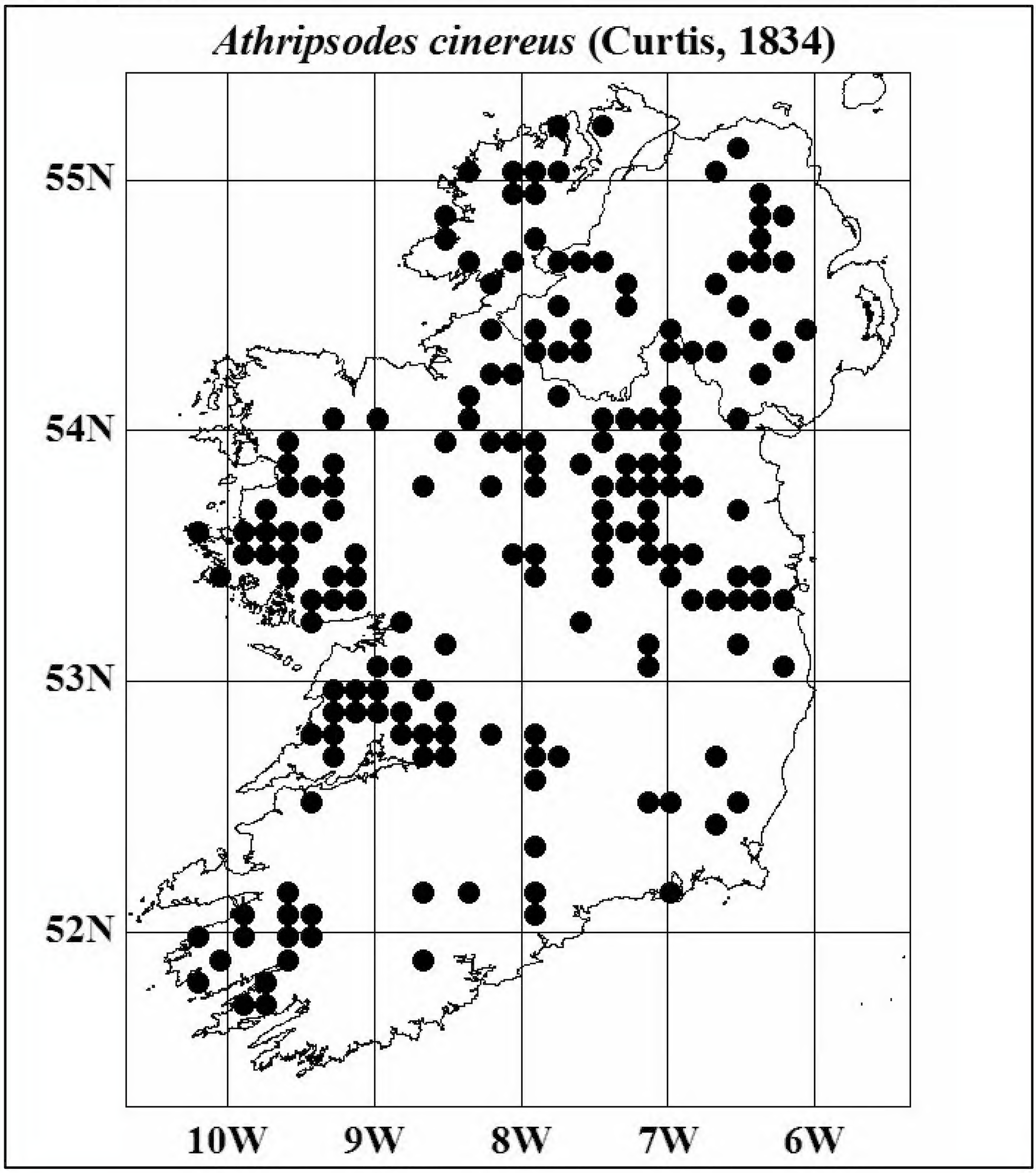


FIGURE 485. Known Irish distribution of *Athripsodes commutatus* (Rostock, 1874).

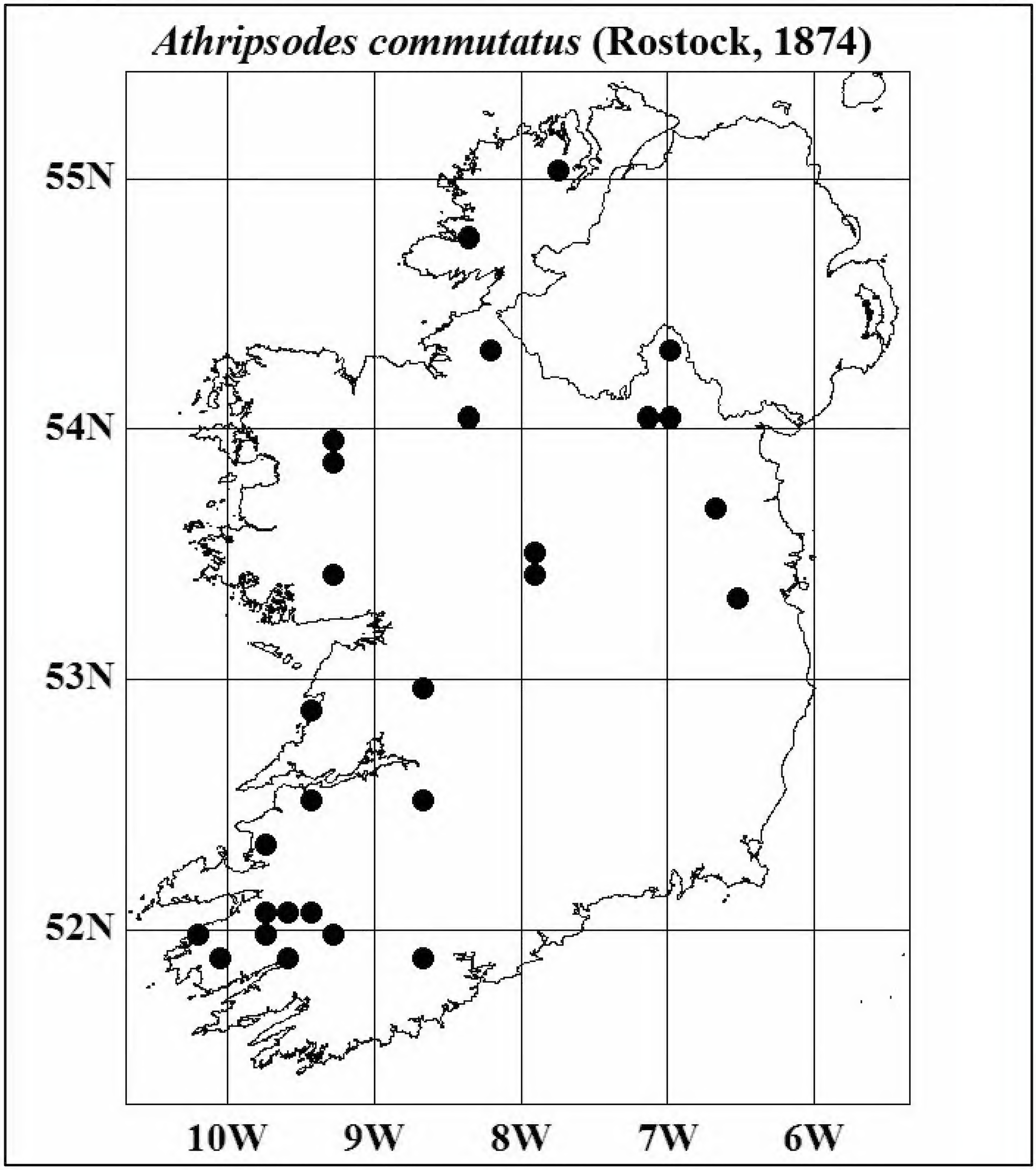


FIGURE 486. Known Irish distribution of *Ceraclea albimacula* (Rambur, 1842).

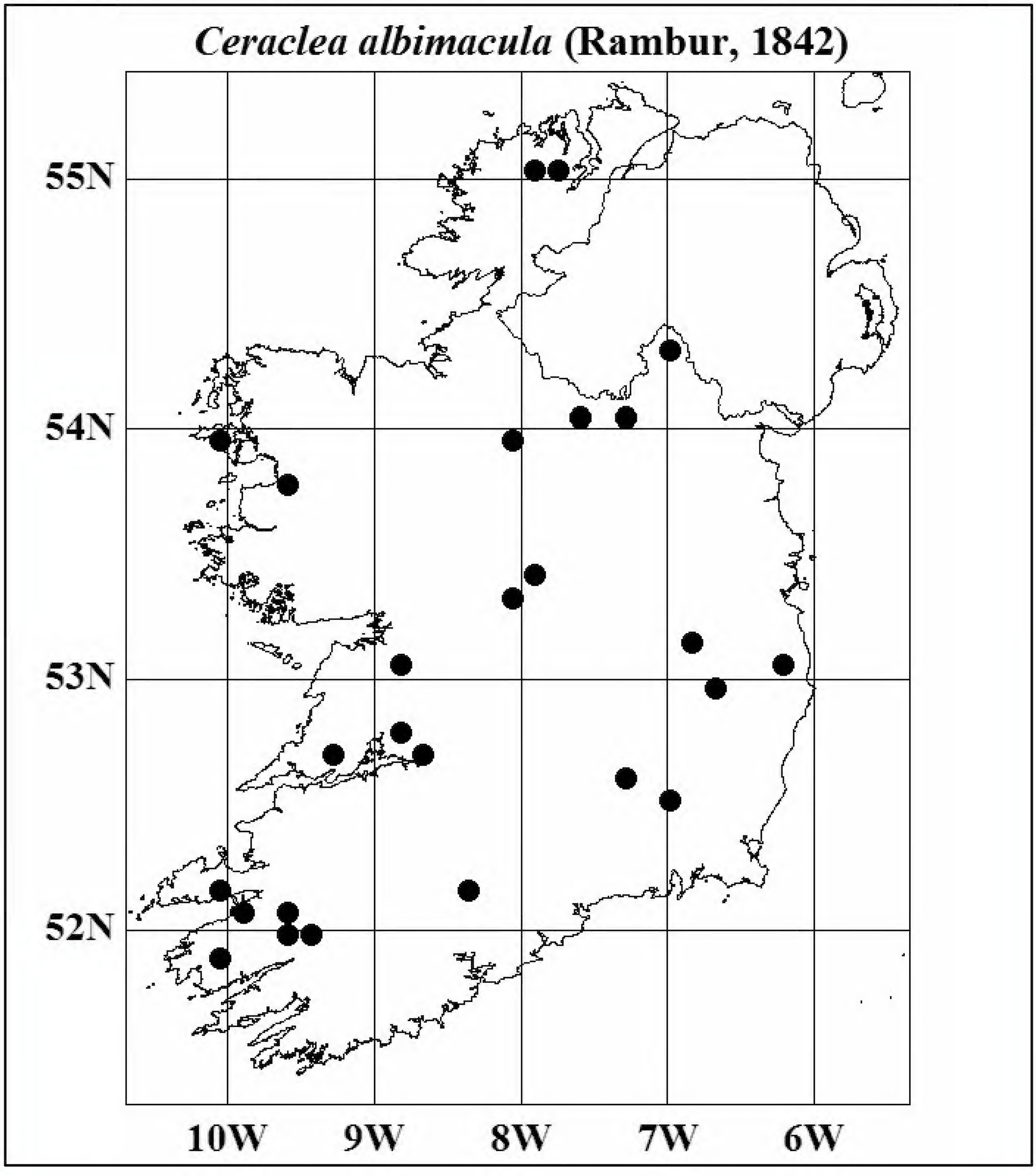


FIGURE 487. Known Irish distribution of *Ceraclea annulicornis* (Stephens, 1836).

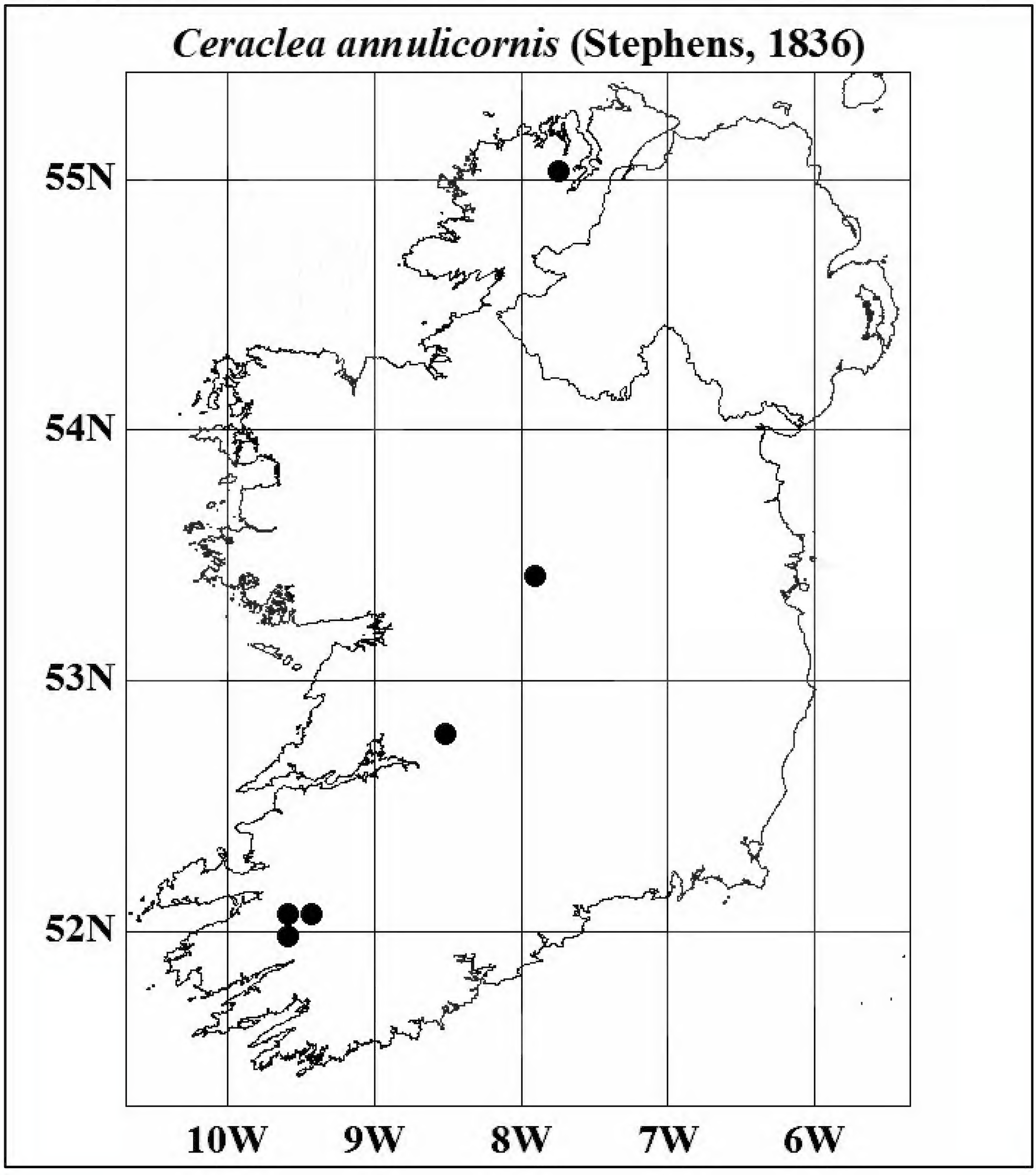


FIGURE 488. Known Irish distribution of *Ceraclea dissimilis* (Stephens, 1836).

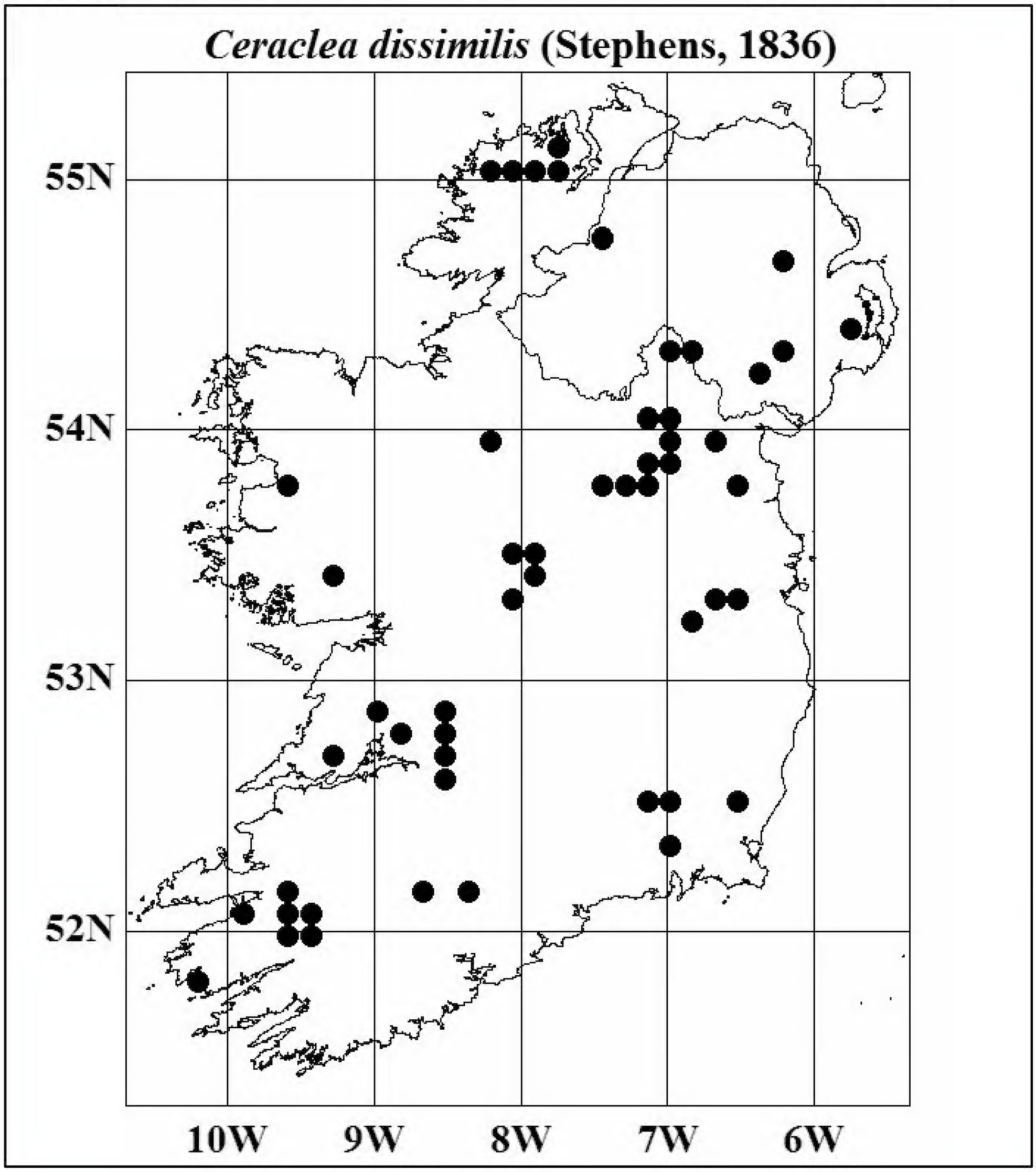


FIGURE 489. Known Irish distribution of *Ceraclea fulva* (Rambur, 1842).

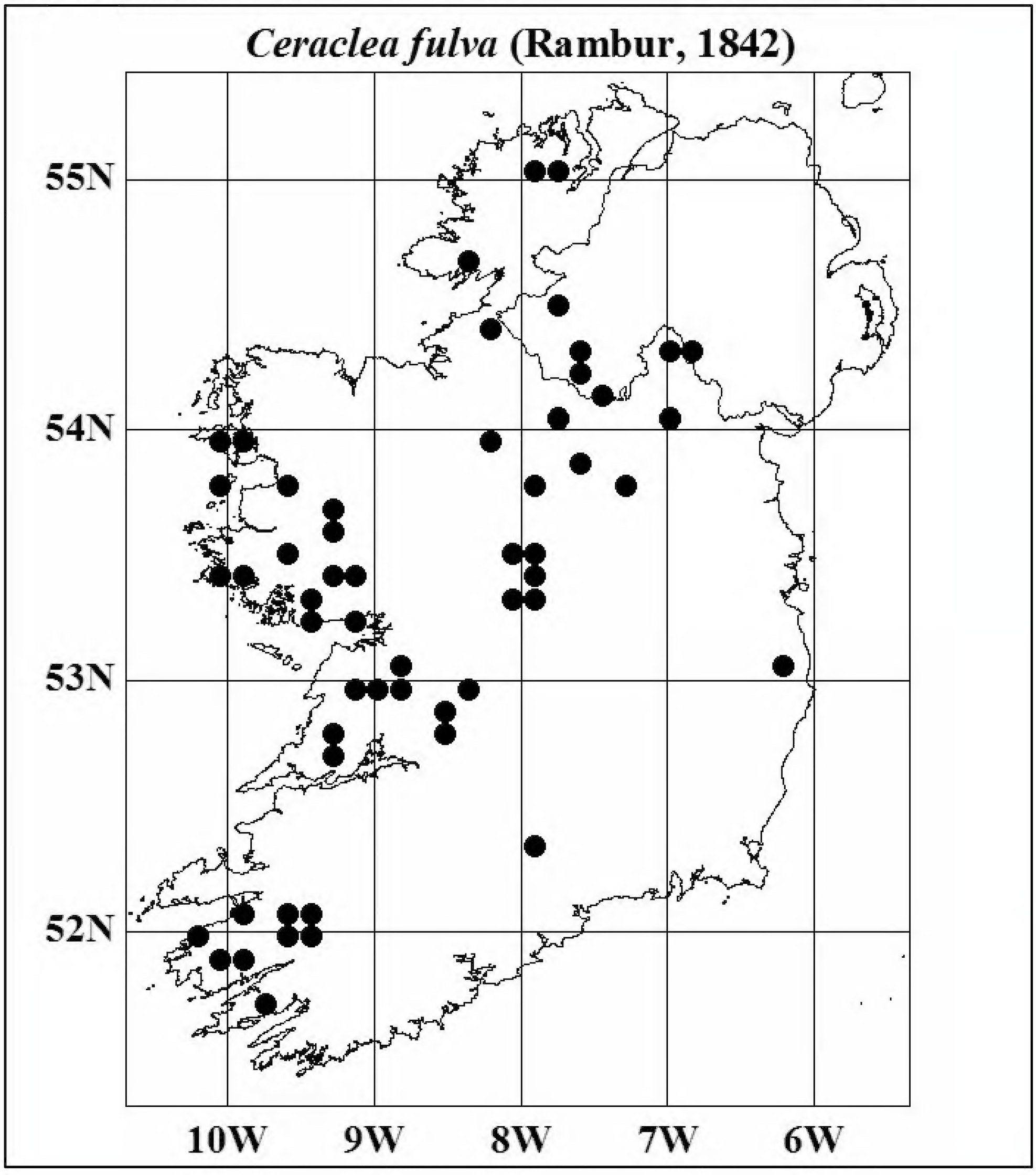


FIGURE 490. Known Irish distribution of *Ceraclea nigronervosa* (Retzius, 1783).

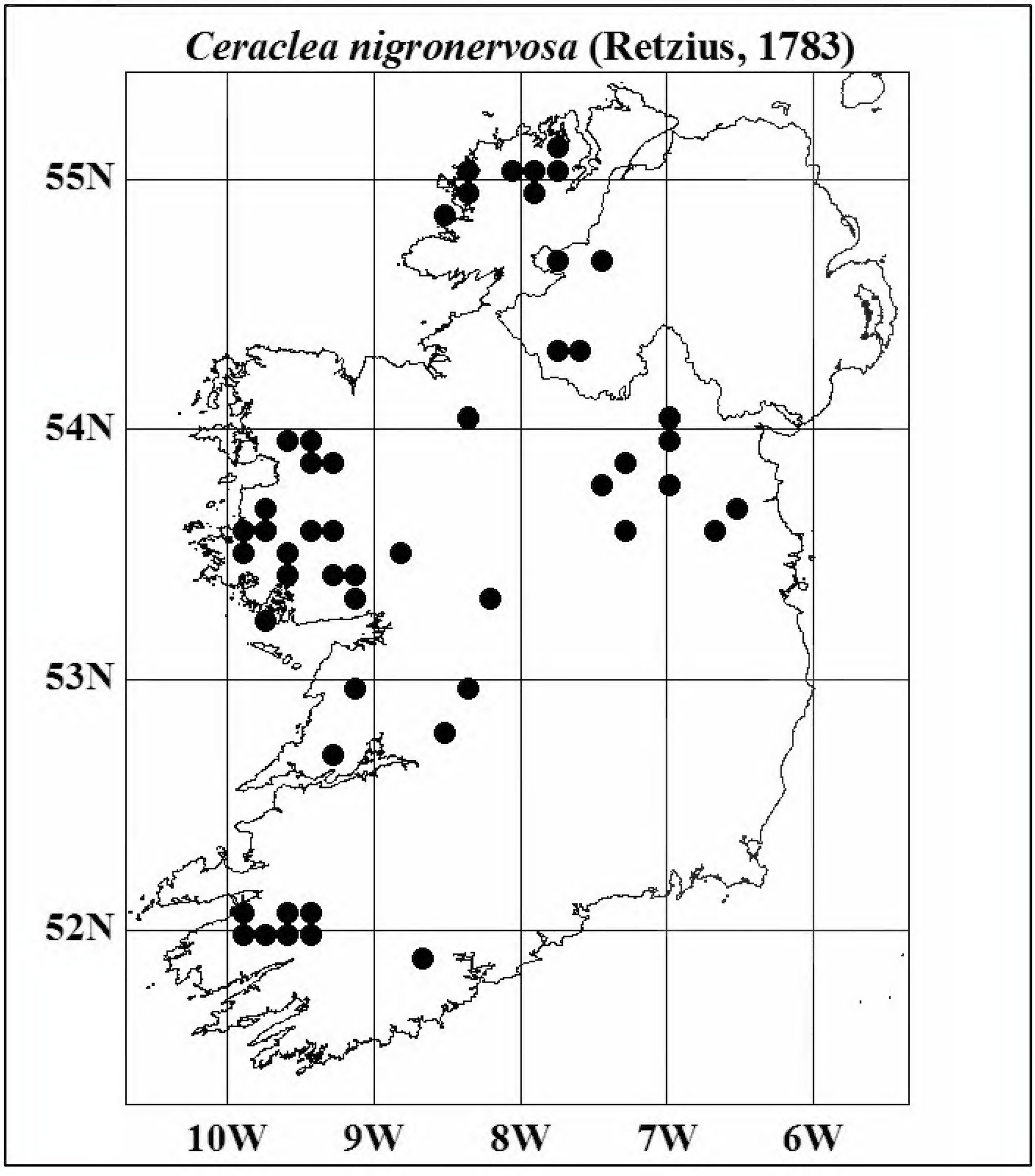


FIGURE 491. Known Irish distribution of *Ceraclea senilis* (Burmeister, 1839).

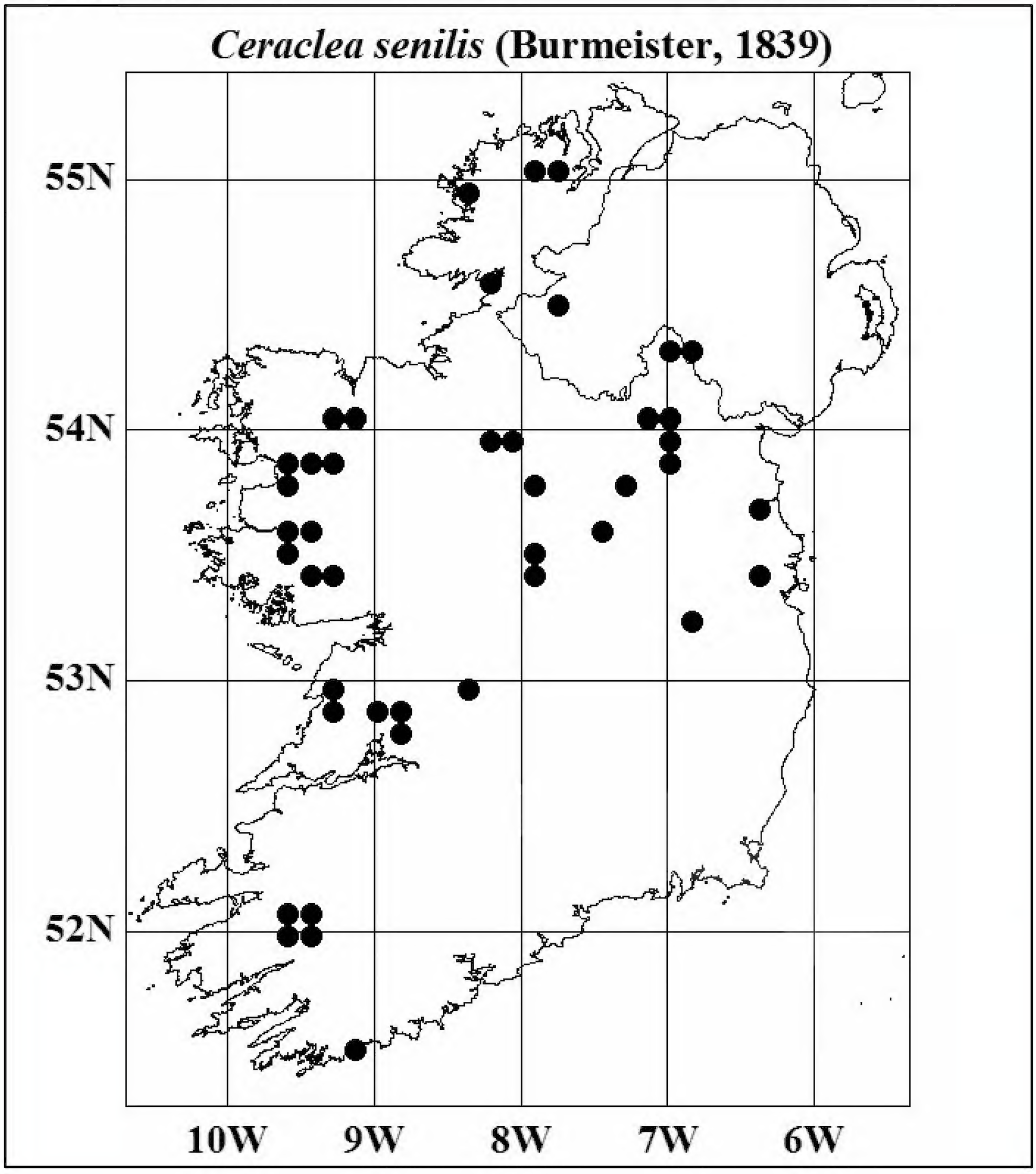


FIGURE 492. Known Irish distribution of *Erotesis baltica* McLachlan, 1877.

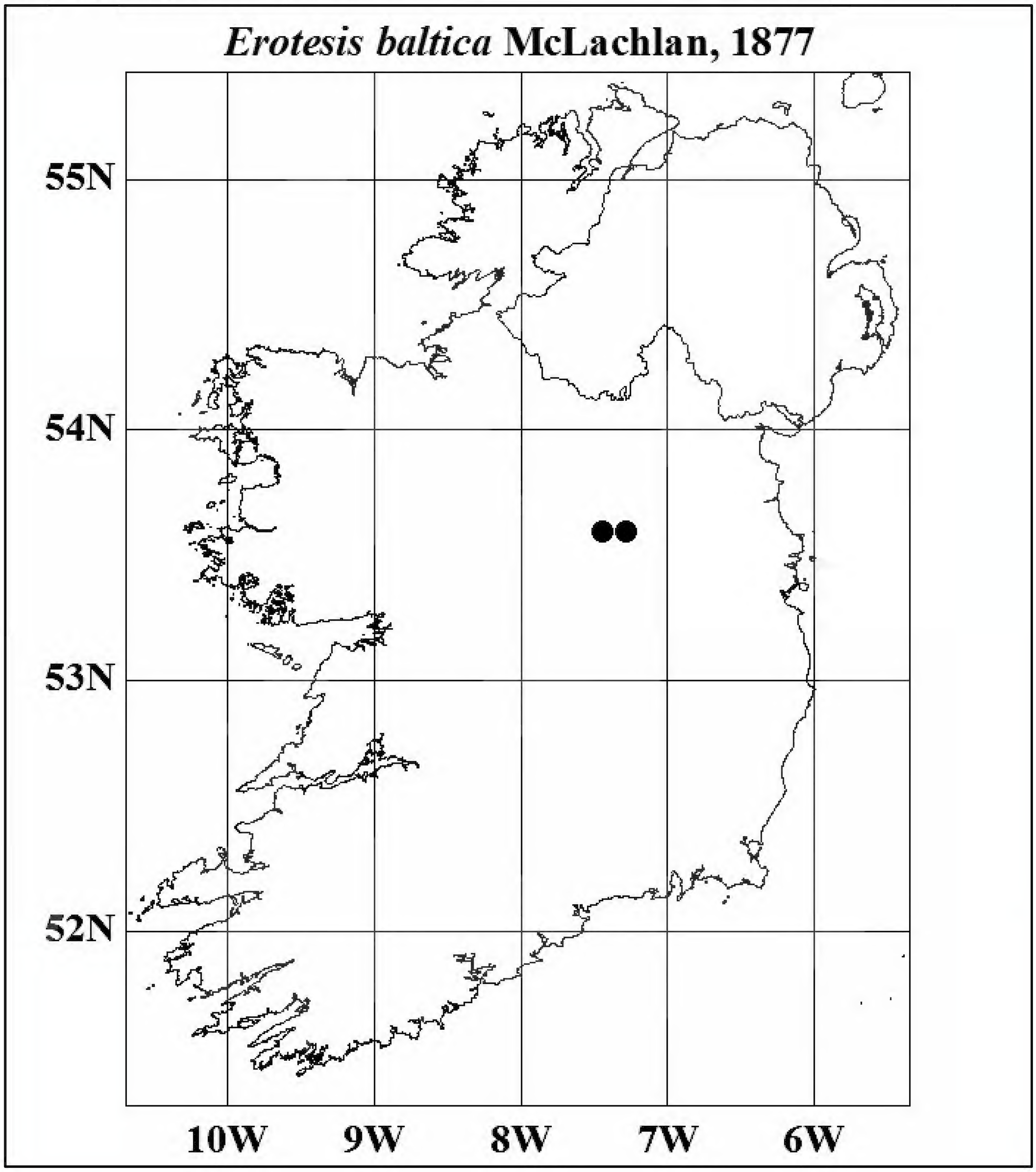


FIGURE 493. Known Irish distribution of *Leptocerus tineiformis* Curtis, 1834.

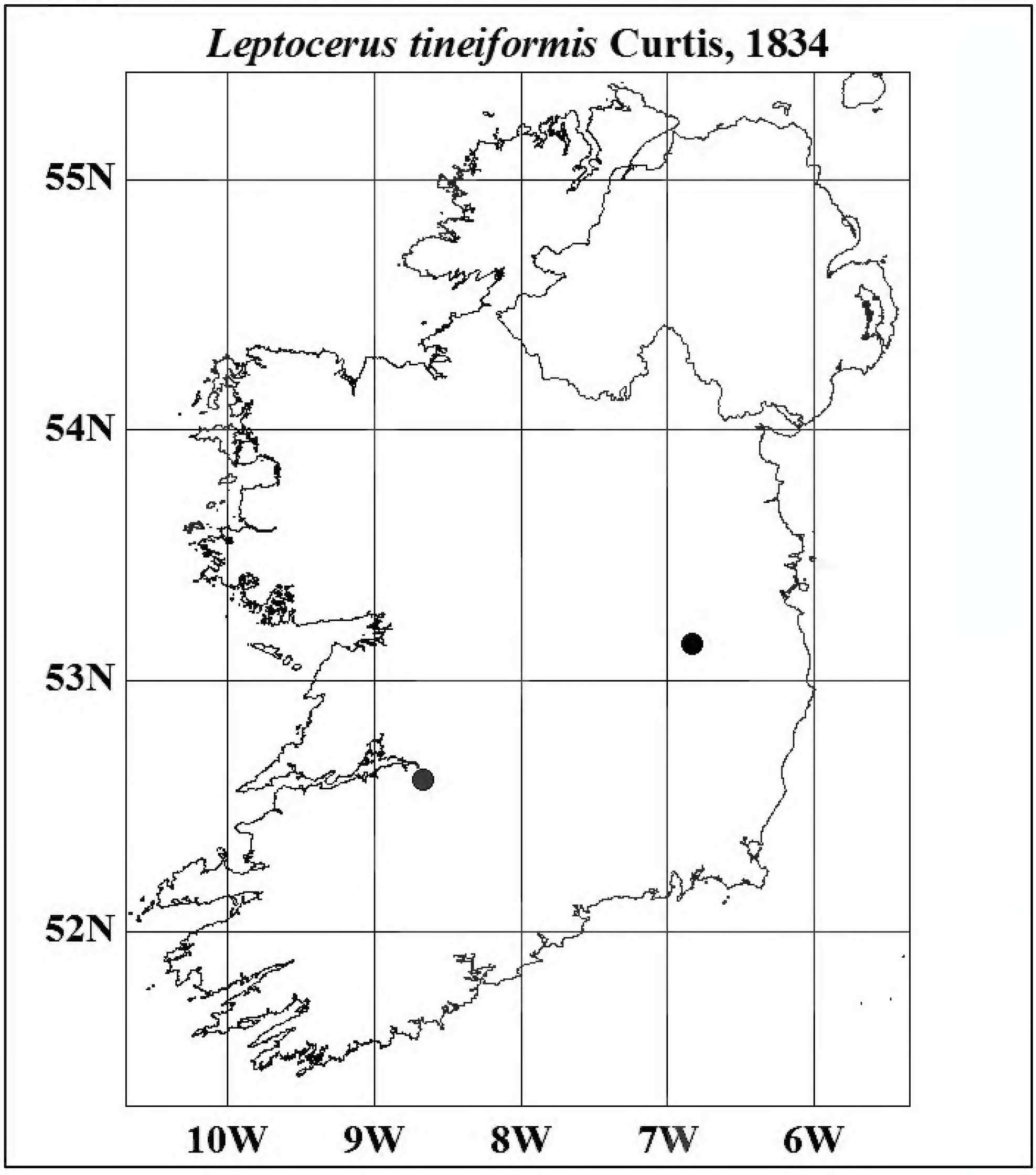


FIGURE 494. Known Irish distribution of *Mystacides azurea* (Linnaeus, 1761).

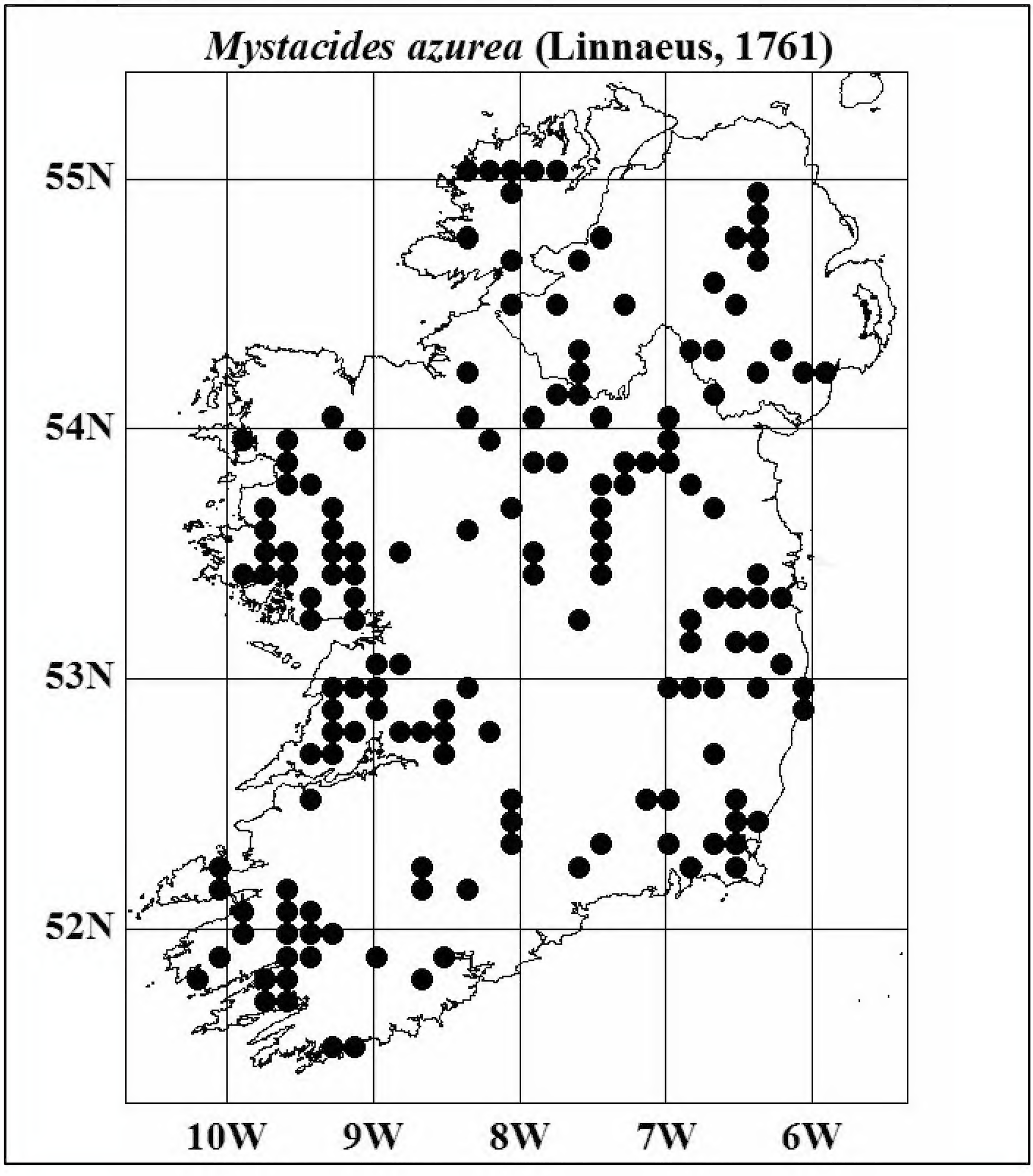


FIGURE 495. Known Irish distribution of *Mystacides longicornis* (Linnaeus, 1758).

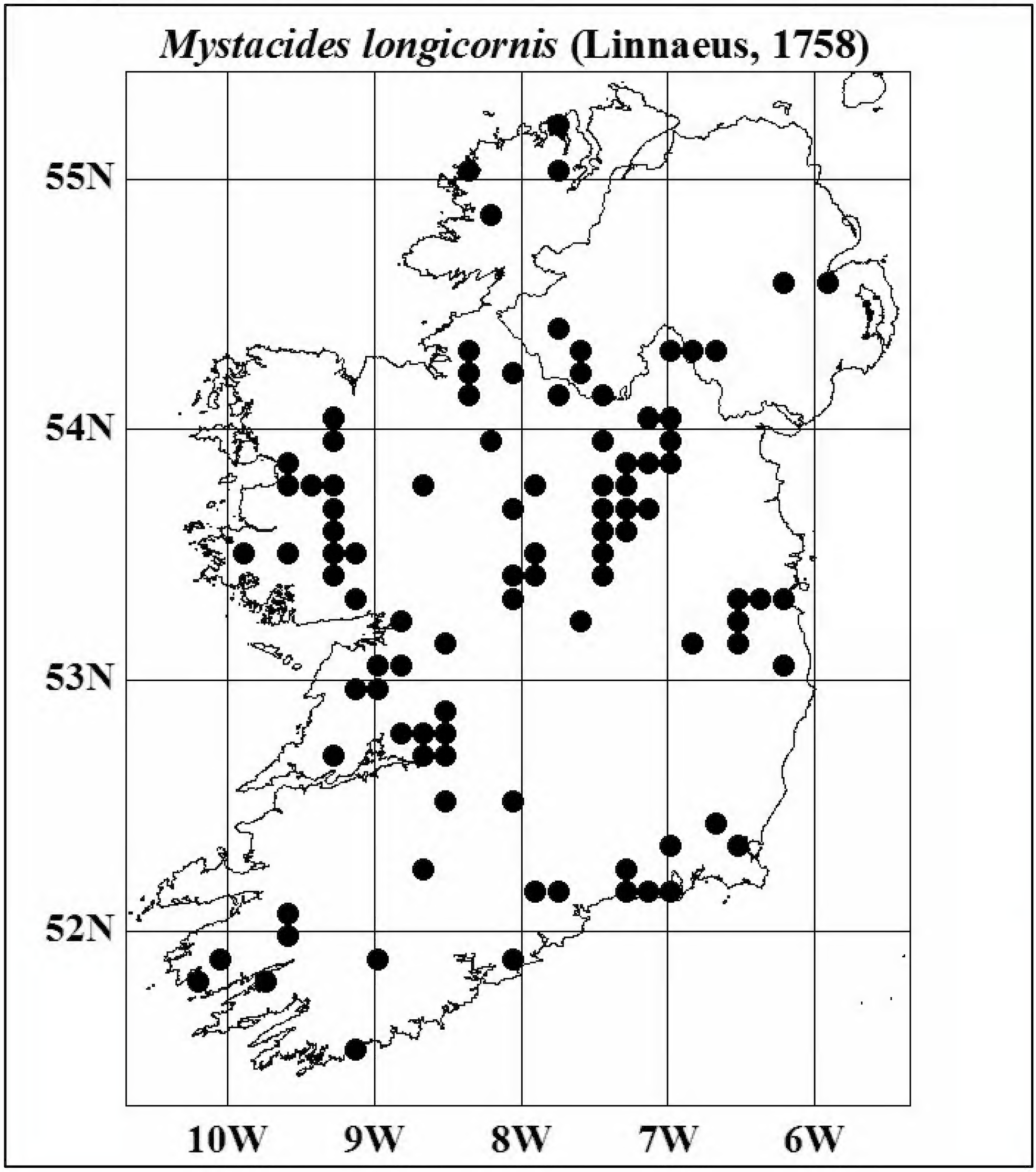


FIGURE 496. Known Irish distribution of *Oecetis furva* (Rambur, 1834).

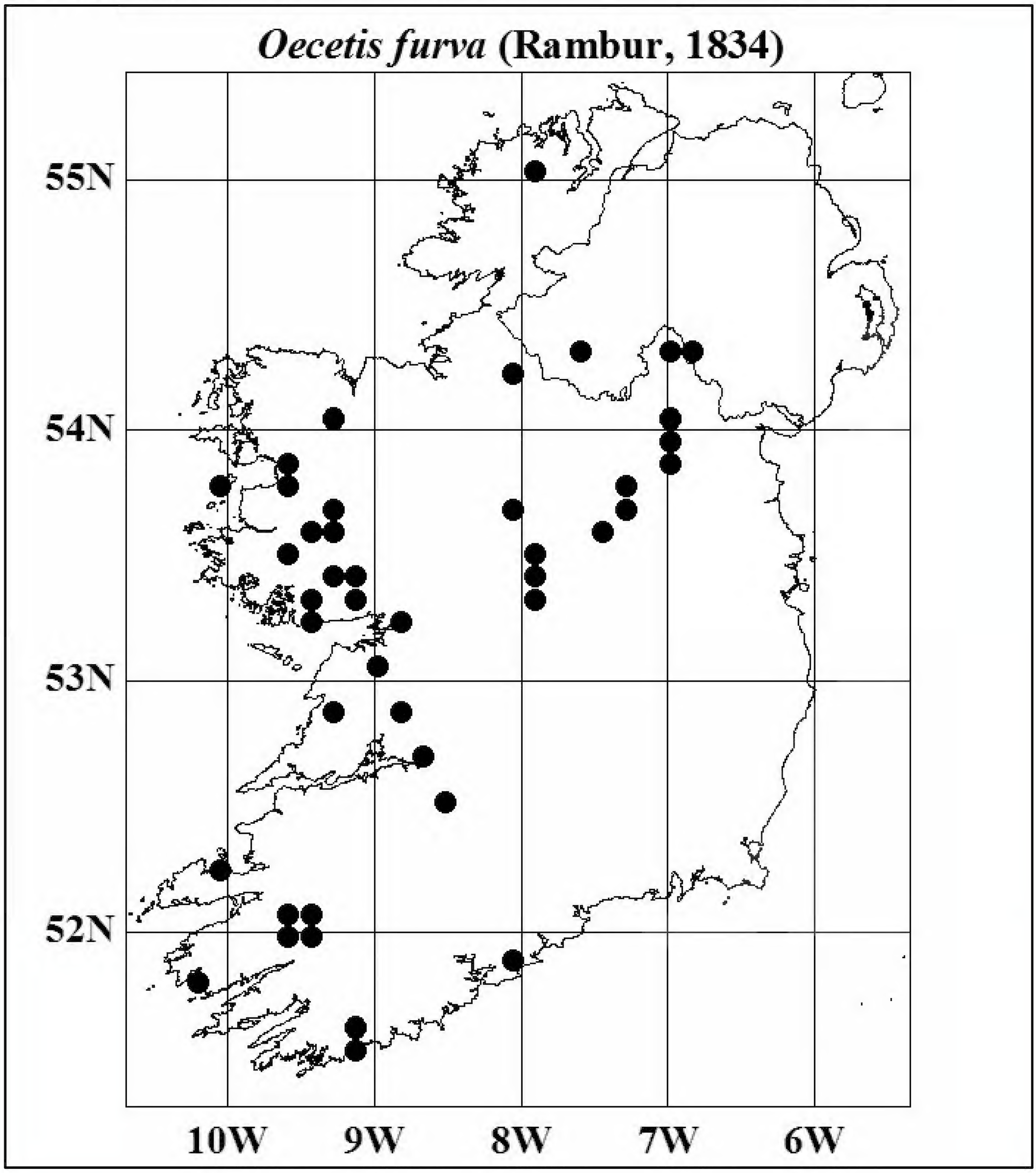


FIGURE 497. Known Irish distribution of *Oecetis lacustris* (Pictet, 1834).

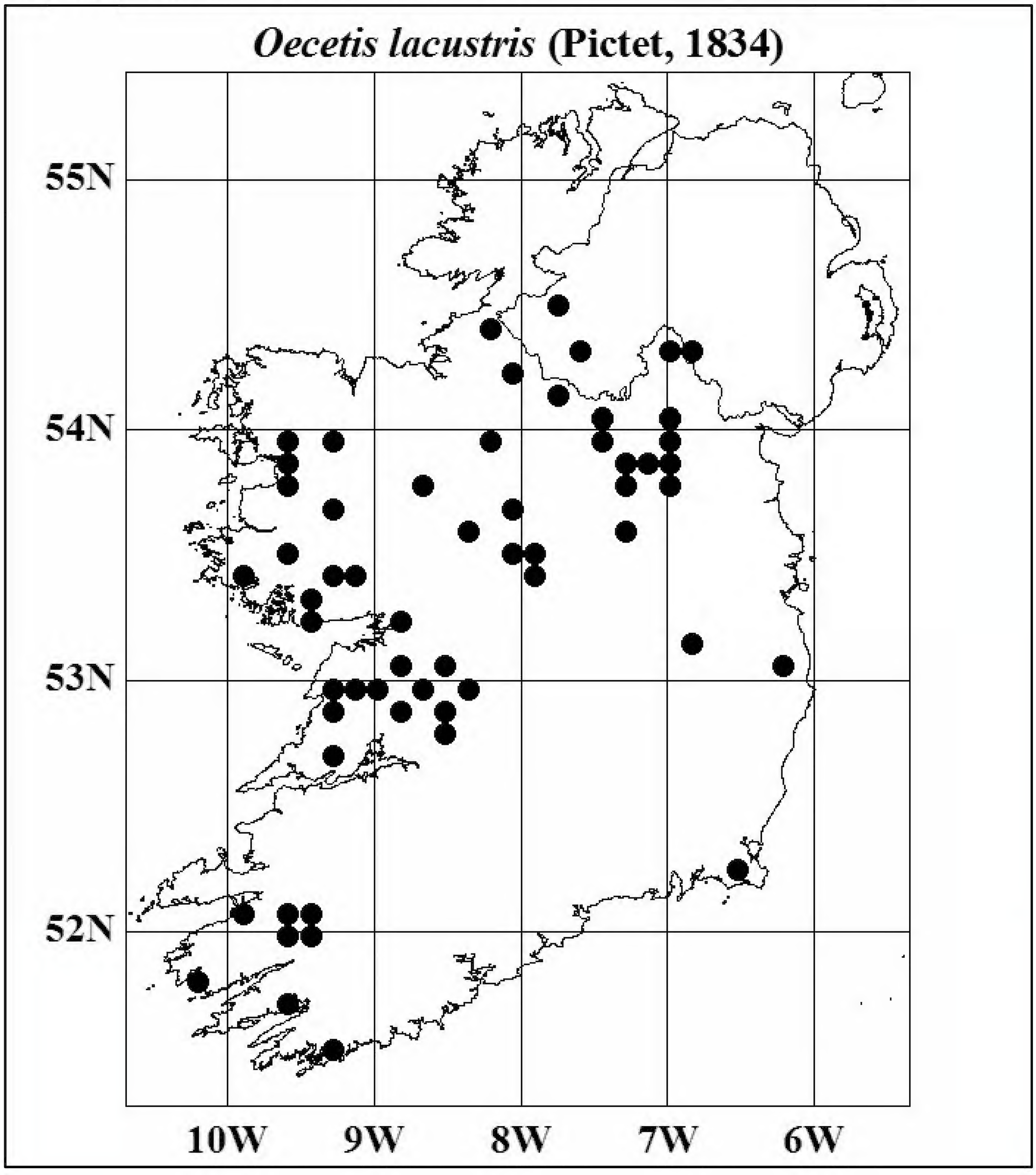


FIGURE 498. Known Irish distribution of *Oecetis notata* (Rambur, 1842).

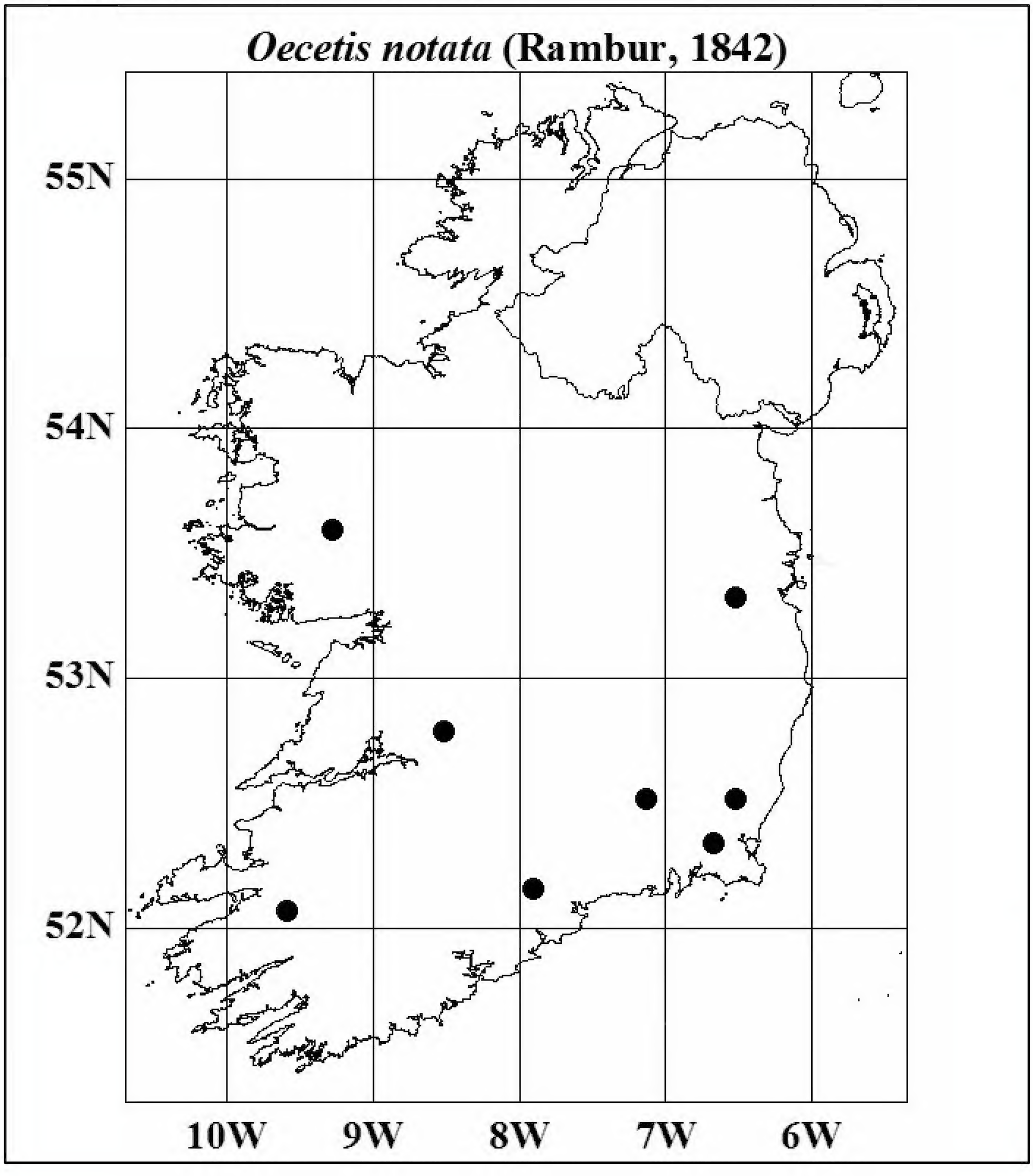


FIGURE 499. Known Irish distribution of *Oecetis ochracea* (Curtis, 1825).

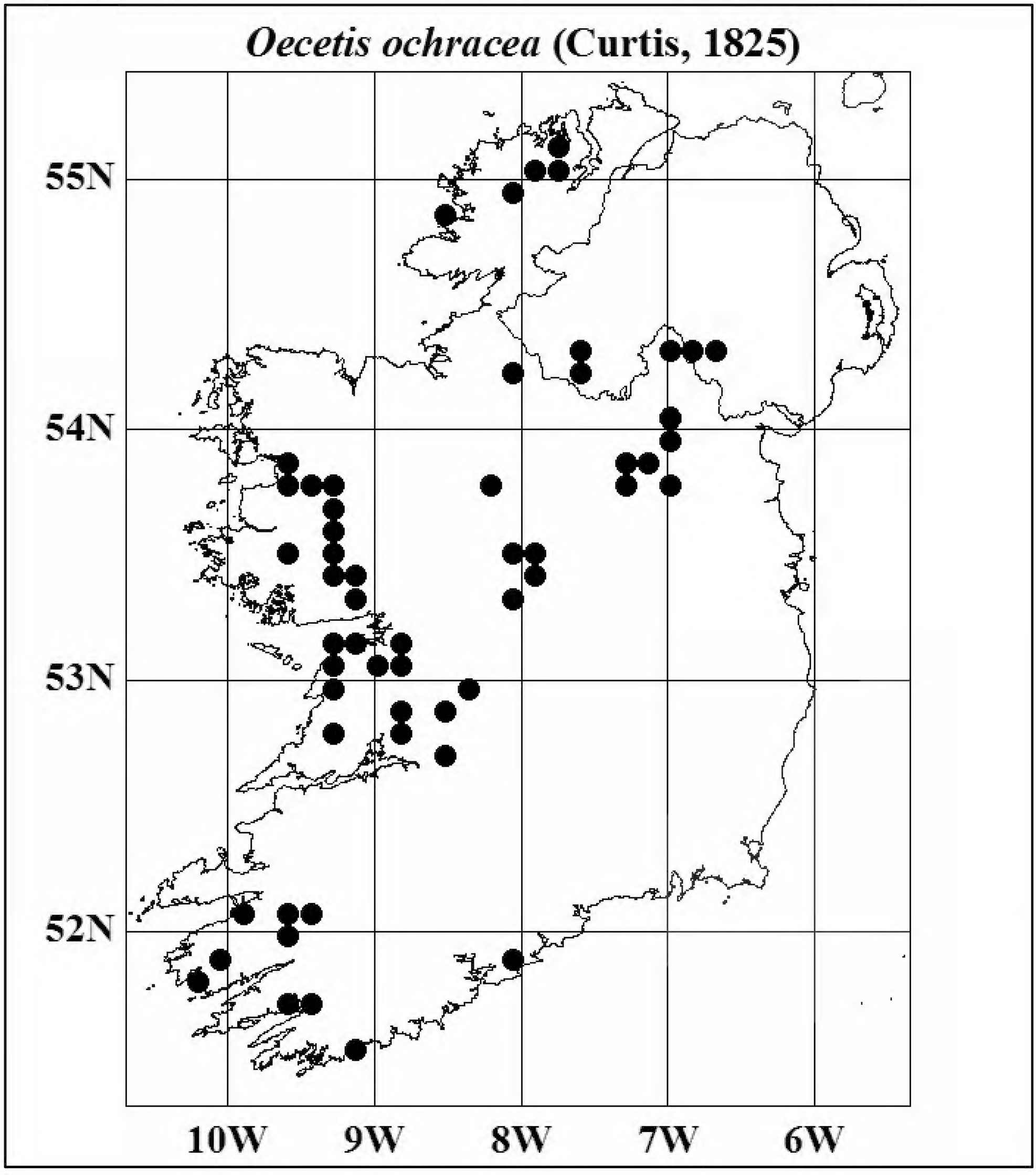


FIGURE 500. Known Irish distribution of *Oecetis testacea* Curtis, 1825.

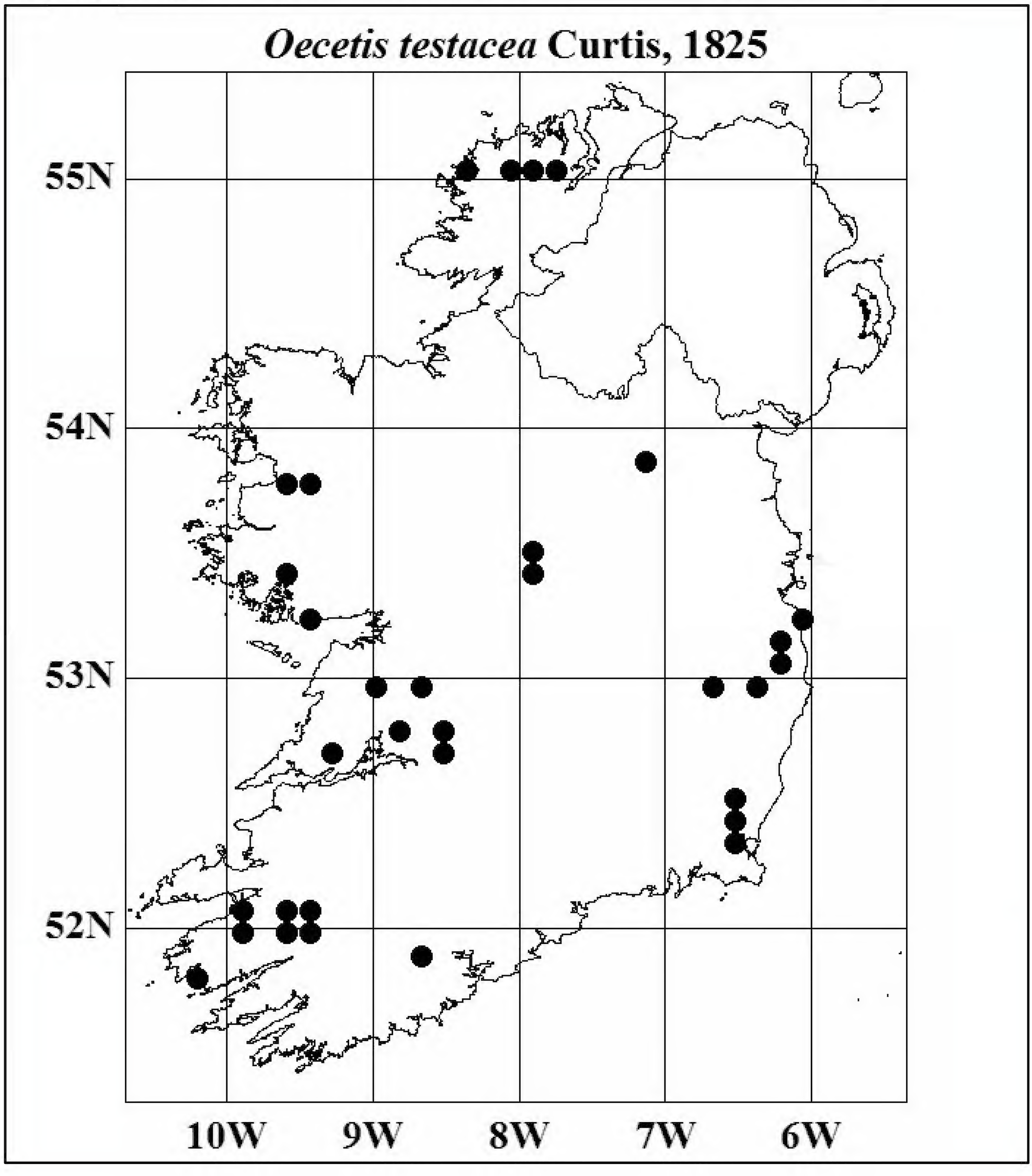


FIGURE 501. Known Irish distribution of *Setodes argentipunctellus* McLachlan, 1877.

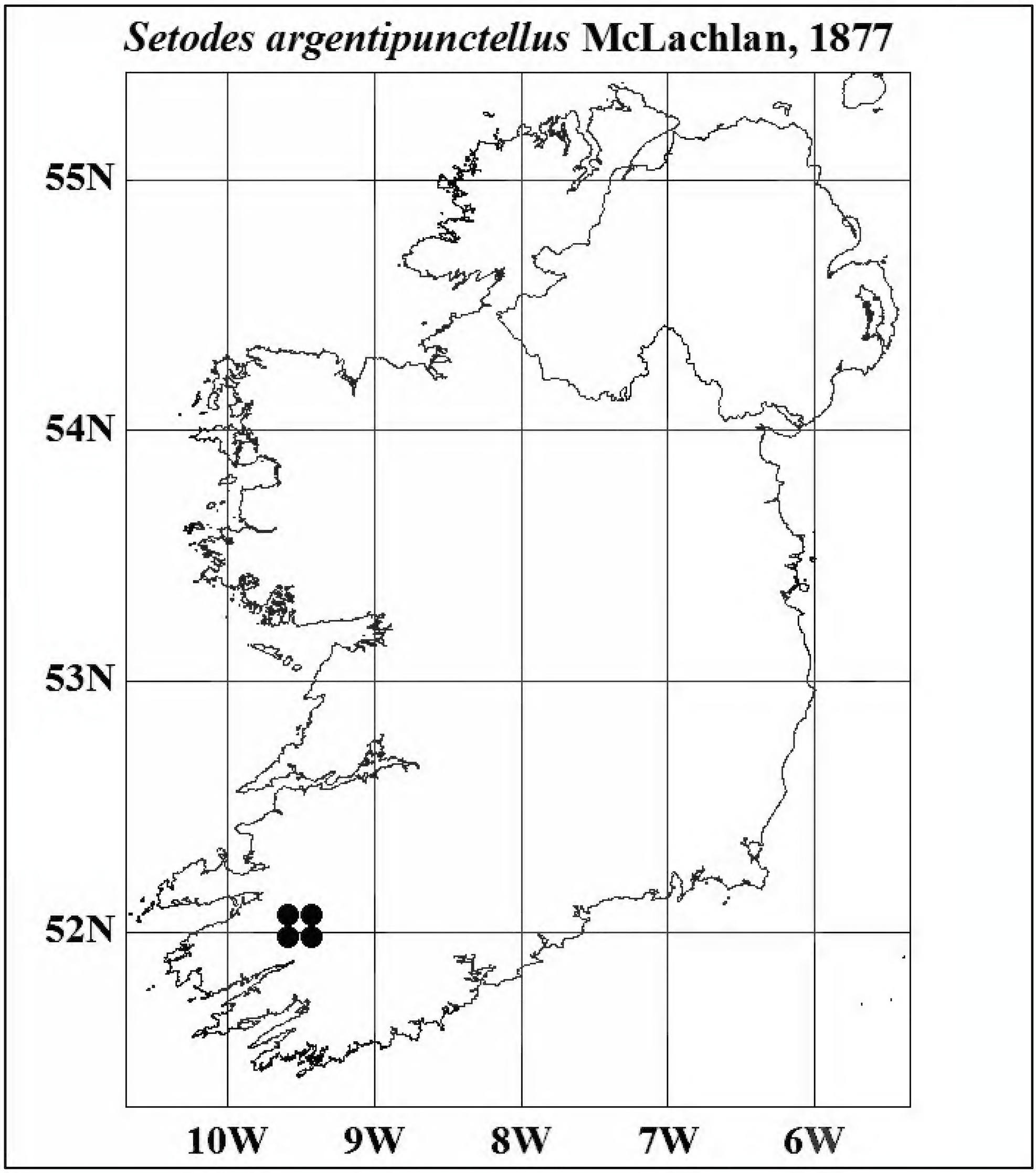


FIGURE 502. Known Irish distribution of *Triaenodes bicolor* (Curtis, 1834).

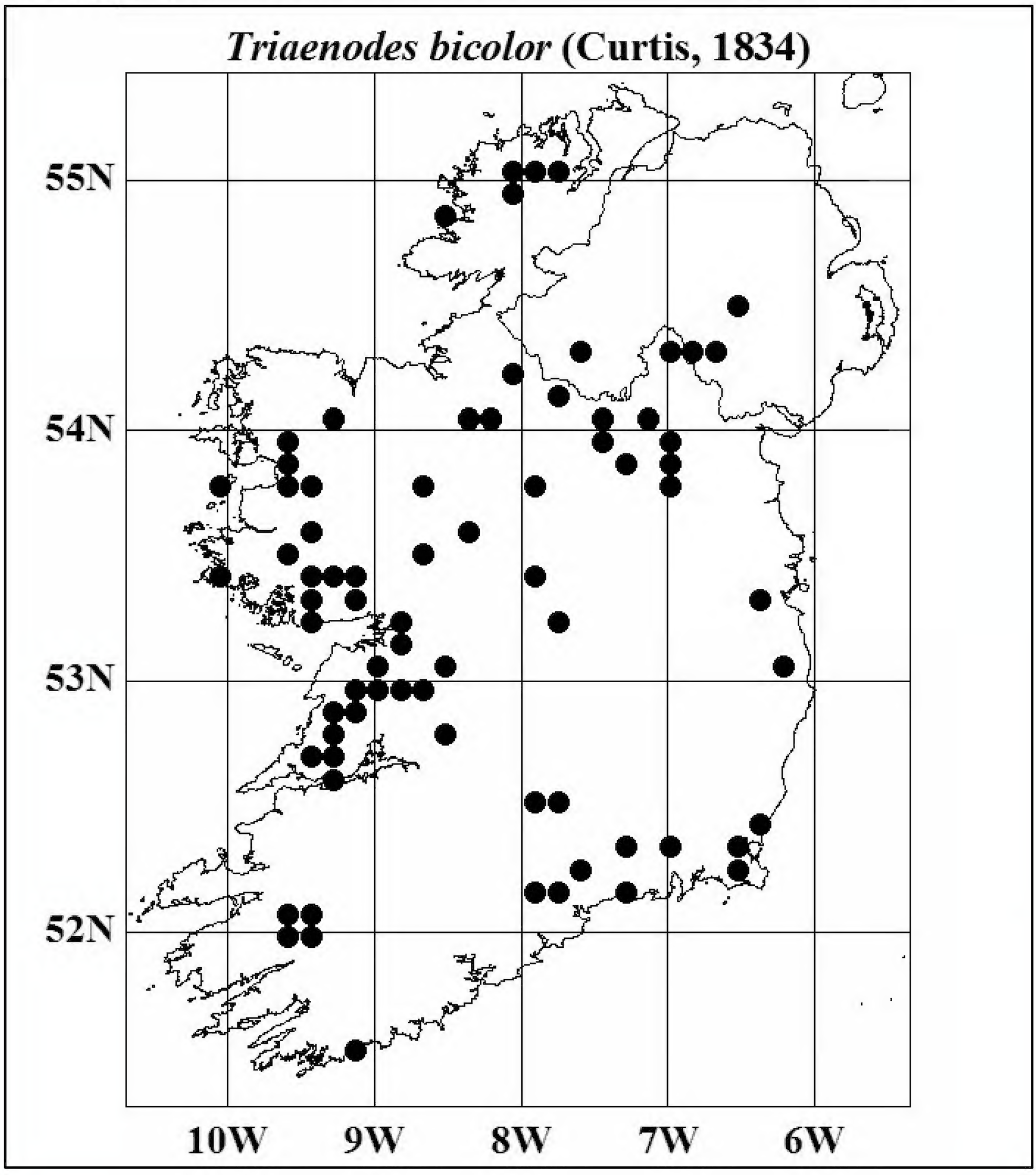
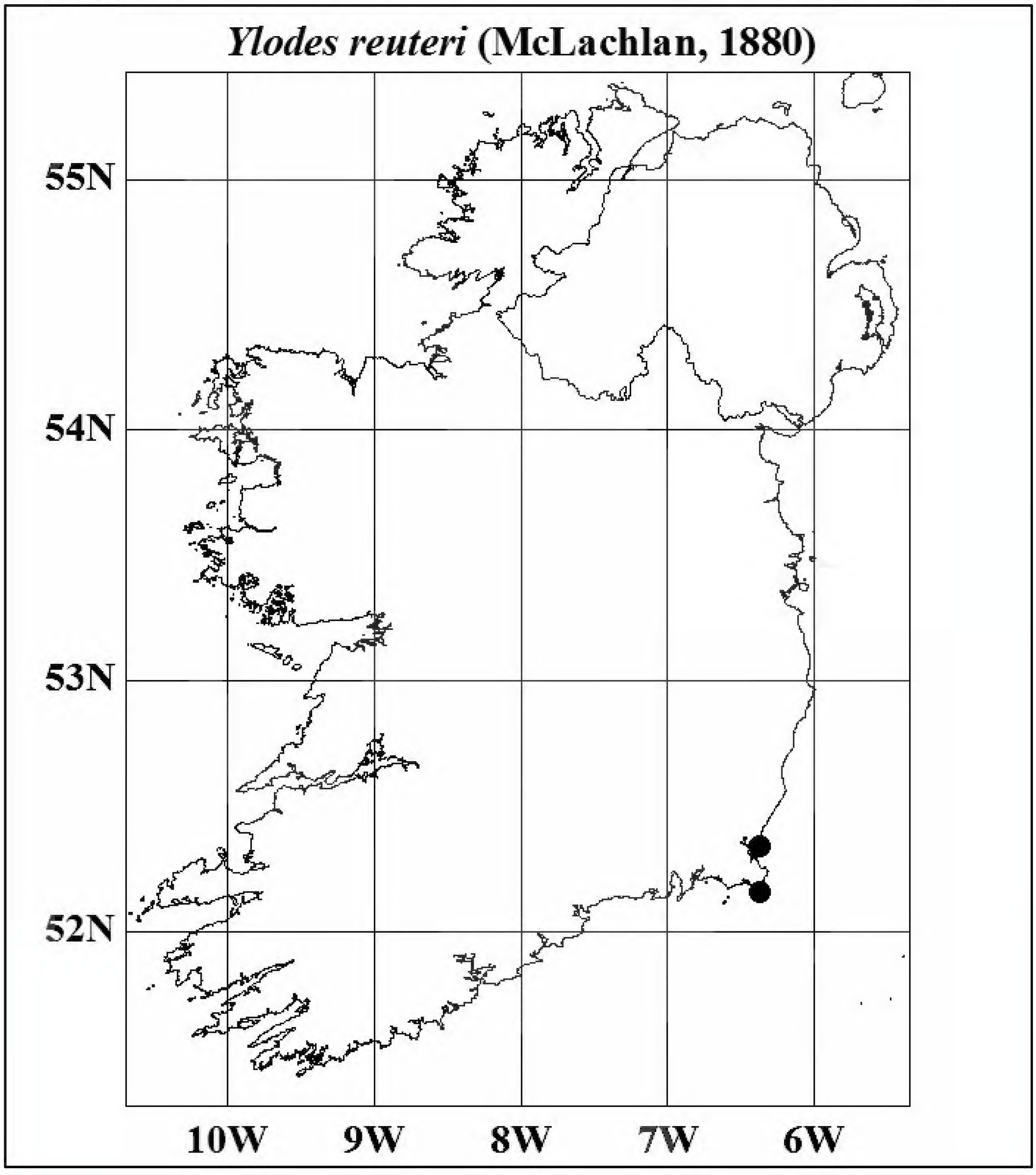


FIGURE 503. Known Irish distribution of *Ylodes reuteri* (McLachlan, 1880).



Endpieces

Some of the trichopterists mentioned in the text.

FIGURE 504. Robert McLachlan.

FIGURE 505. Martin Mosely.

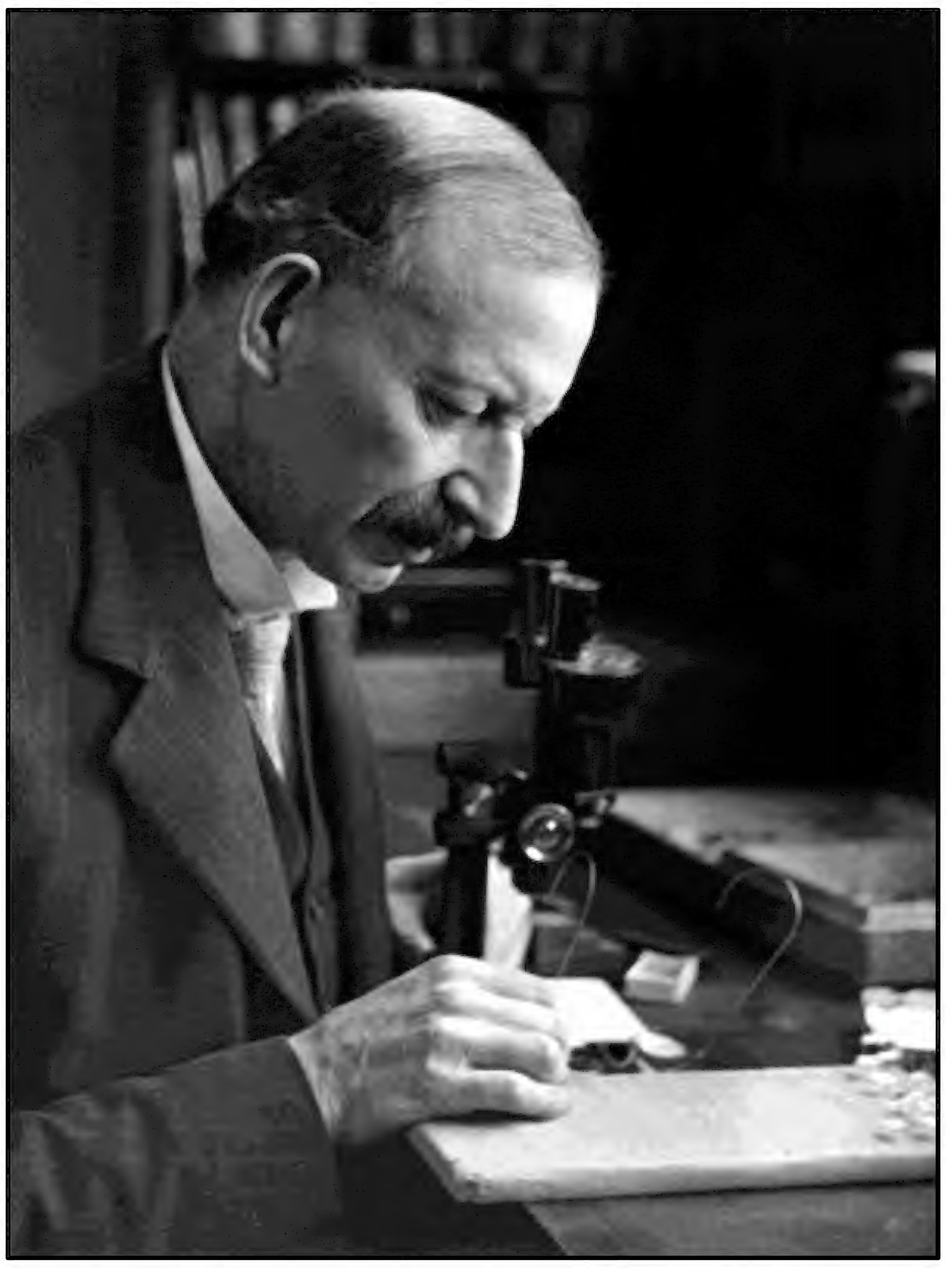


FIGURE 506. W. F. Johnson.

FIGURE 507. Andy Nimmo.

Some of the trichopterists mentioned in the text.

FIGURE 508. Norman Hickin.

FIGURE 509. Ian Crichton.

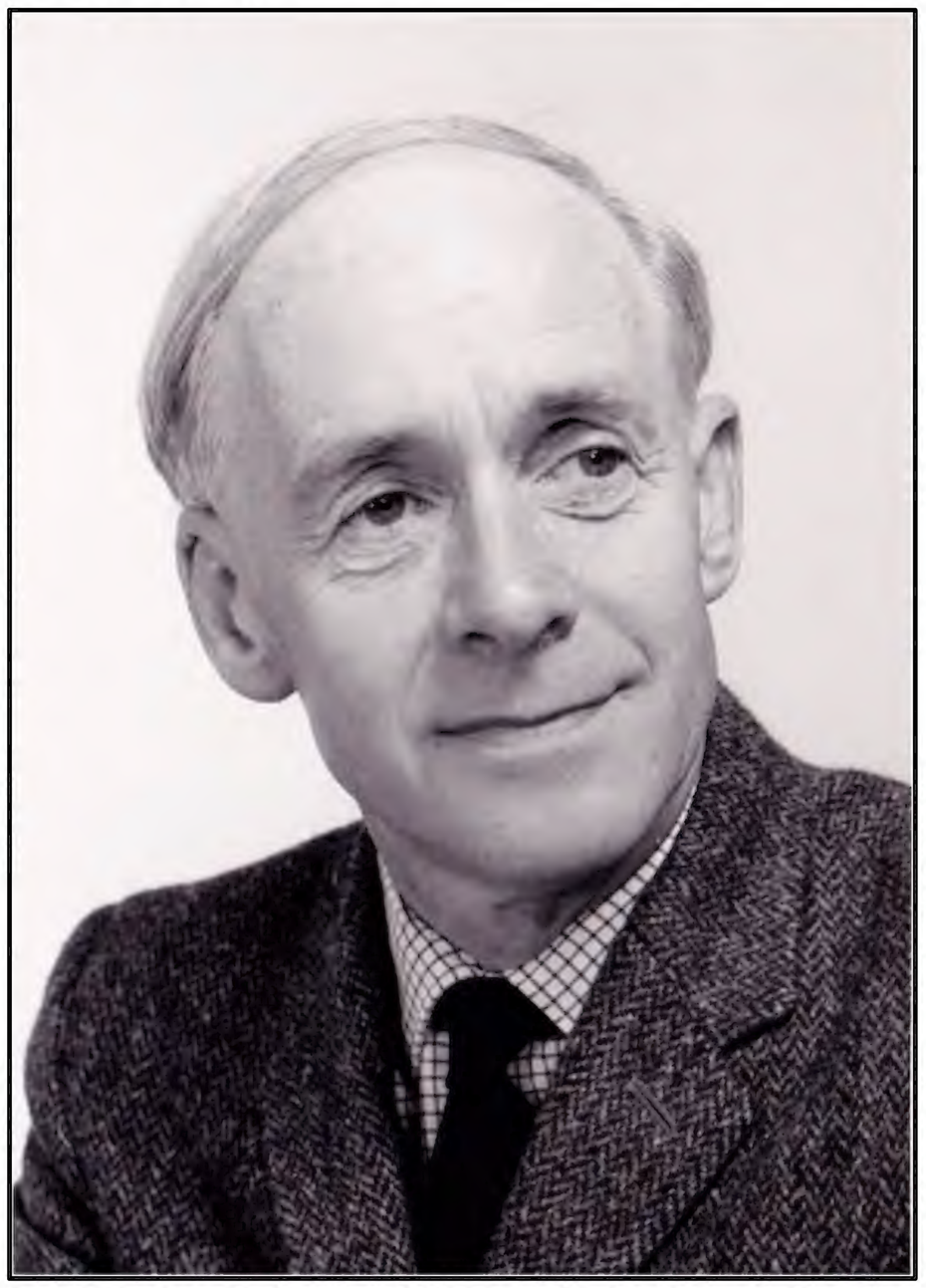


FIGURE 510. Peter Barnard.

FIGURE 511. Hans Malicky.

Some of the trichopterists mentioned in the text.

FIGURE 512. James N. Halbert.

FIGURE 513. Michael Kennedy, aka Doc.

FIGURE 514. Winifred Frost, aka WEF.

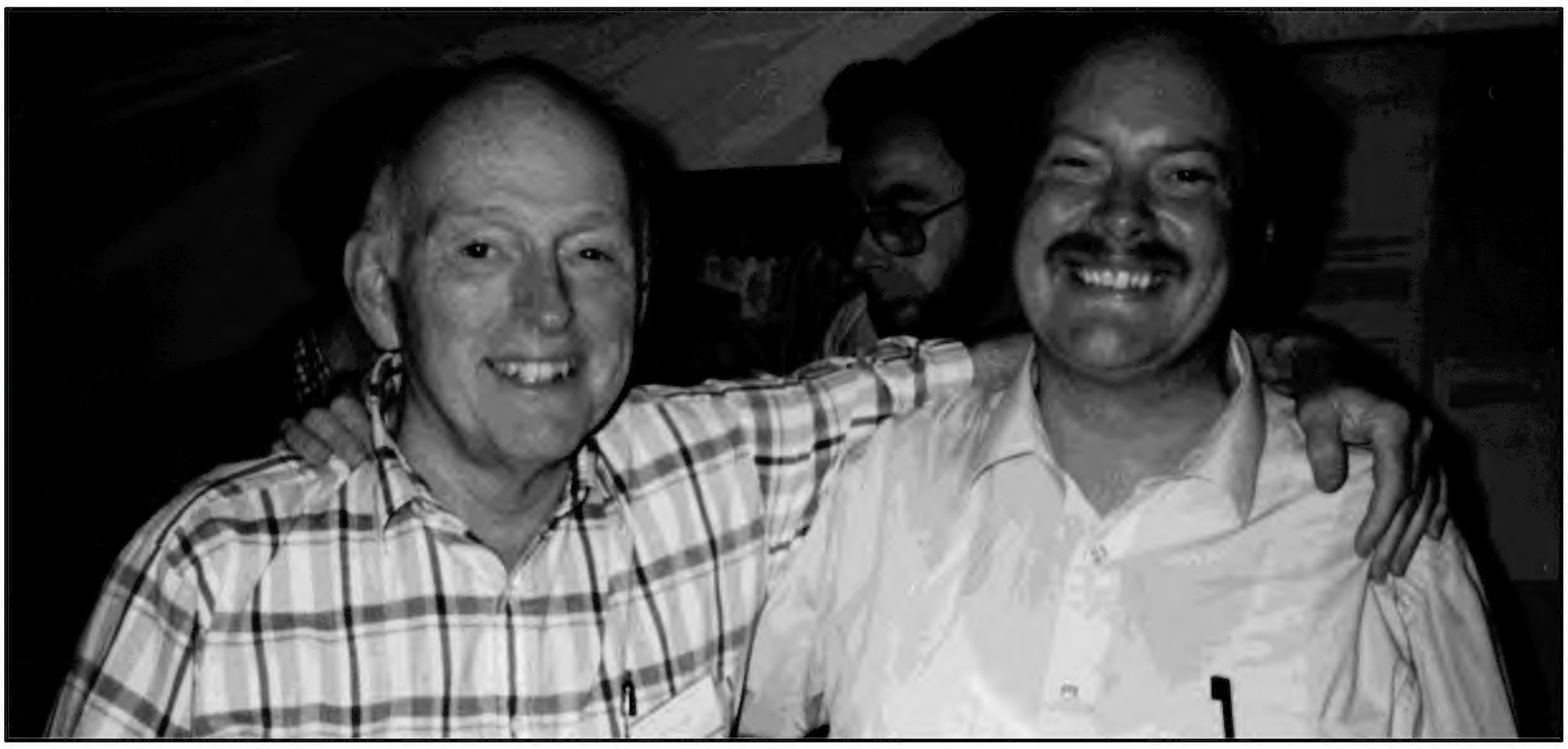
FIGURE 515. James O'Connor, aka Jim.

Some of the trichopterists mentioned in the text.

FIGURE 516. Ian Wallace.

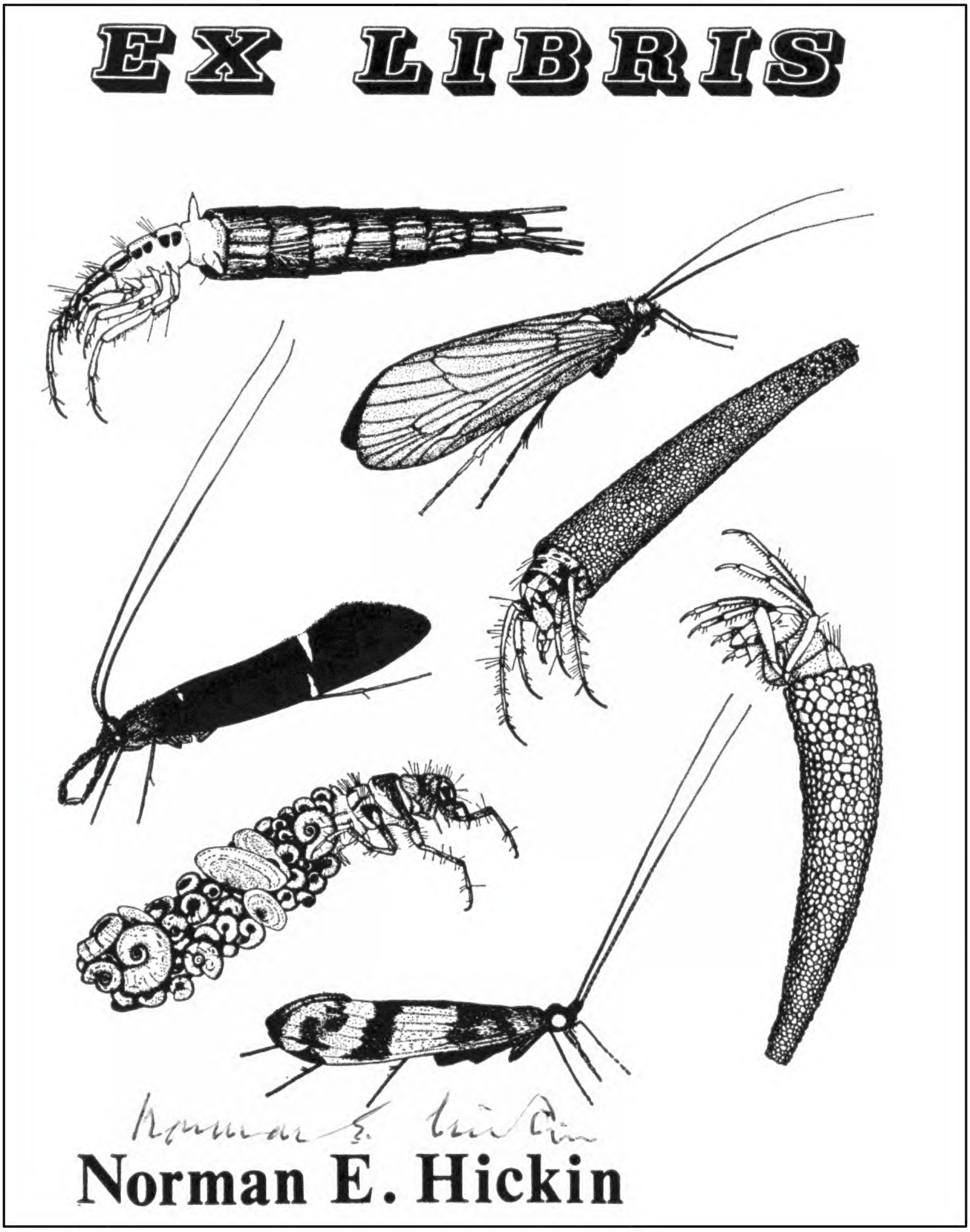
FIGURE 517. Brenda Wallace.

FIGURE 518. Ollie Flint and the author at a barbeque, relaxing after collecting caddisflies in Sweden, during the 7th International Symposium on Trichoptera in Umeå, 1992.



and finally

FIGURE 519. A bookplate signed by Norman Hickin and given by him to the author, illustrated with some of his lovely drawings of trichopteran adults and larvae. It has pride of place in the author's now rather battered copy of Norman's book *Caddis larvae. Larvae of the British Trichoptera*.



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ordinary type – checklist; **bold** – catalogue; *italics* – atlas

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